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NATIONAL DAM SAFETY PROGRAM. HIGINBOTHAM BROOK WATERSHED PROJEC--ETC(U)
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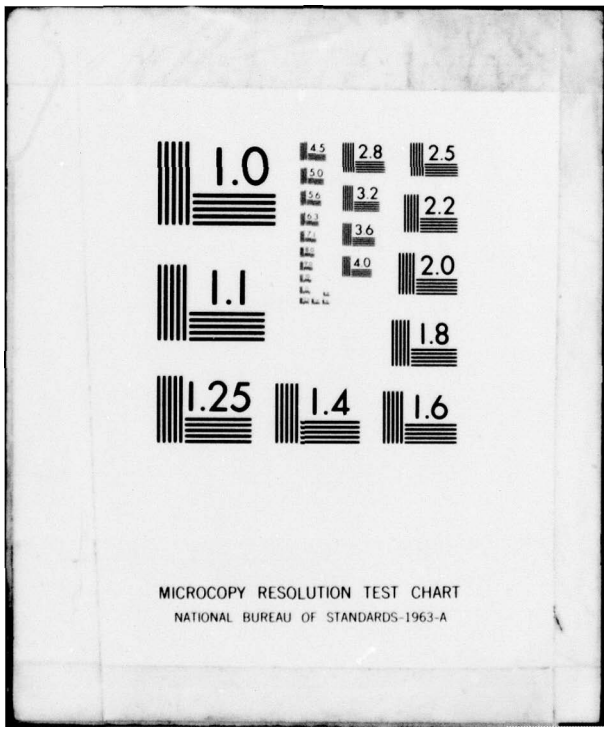
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REPORT DOCUMENTATION PAGE

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1. REPORT NUMBER	2. GOVT ACCESSION NO. / 3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle): Phase I Inspection Report Higinbotham Brook Watershed Project Oswego River Basin, Madison County, New York Inventory No. 703	5. TYPE OF REPORT & PERIOD COVERED: Phase I Inspection Report National Dam Safety Program 6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s): (10) George Koch, P.E.	8. CONTRACT OR GRANT NUMBER(s): (15) DACW-51-79-C-0001
9. PERFORMING ORGANIZATION NAME AND ADDRESS: New York State Department of Environmental Conservation/ 50 Wolf Road Albany, New York 12233	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS: New York State Department of Environmental Conservation/ 50 Wolf Road Albany, New York 12233	12. REPORT DATE: 25 September 1979 (11) 13. NUMBER OF PAGES
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office): Department of the Army 26 Federal Plaza/ New York District, CofE New York, New York 10007 (12) 138	15. SECURITY CLASS. (of this report): UNCLASSIFIED 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; Distribution unlimited.

(6) National Dam Safety Program. Higinbotham Brook Watershed Project (Inventory Number NY703). Oswego River Basin, Madison County, New York. Phase I Inspection Report.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

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18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Dam Safety
National Dam Safety Program
Visual Inspection
Hydrology, Structural Stability
Higinbotham Brook Watershed Project
Madison County

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This report provides information and analysis on the physical condition of the dam as of the report date. Information and analysis are based on visual inspection of the dam by the performing organization.

The examination of documents and visual inspection of the Higinbotham Brook dams and appurtenant structures did not reveal conditions which constitute a hazard to human life or property. (over)

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The total discharge capacity of the spillways is adequate for the Probable Maximum Flood (PMF).

The following remedial actions are required during this construction season:

1) Repair the erosion areas on and in the vicinity of Dam 1. Seed and mulch all unprotected areas to establish erosion resistant vegetation;

2) Repair the eroded area in the downstream channel;

3) Periodically monitor the slopes in the reservoir area and repair as required;

4) Provide a program of seeding and mulching of all earth surfaces on the dams and in the reservoir area to establish erosion protection material. If vegetation cannot resist long term erosion action, an alternate method may be required; and

5) Provide a program of periodic inspection and maintenance of the dams and appurtenances. This program must include yearly operation and lubrication of the reservoir drain system. Document this information for future reference;

6. Develop an emergency action plan.

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PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams, for Phase I Investigations. Copies of these guidelines may be obtained from the Office of Chief of Engineers, Washington, D.C. 20314. The purpose of a Phase I Investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigation, and analyses involving topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of a Phase I Investigation; however, the investigation is intended to identify any need for such studies.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with data available to the inspection team. In cases where the reservoir was lowered or drained prior to inspection, such action, while improving the stability and safety of the dam, removes the normal load on the structure and may obscure certain conditions which might otherwise be detectable if inspected under the normal operating environment of the structure.

It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through frequent inspections can unsafe conditions be detected and only through continued care and maintenance can these conditions be prevented or corrected.

Phase I inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established Guidelines, the Spillway Test flood is based on the estimated "Probable Maximum Flood" for the region (greatest reasonably possible storm runoff), or fractions thereof. Because of the magnitude and rarity of such a storm event, a finding that a spillway will not pass the test flood should not be interpreted as necessarily posing a highly inadequate condition. The test flood provides a measure of relative spillway capacity and serves as an aide in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition and the downstream damage potential.

OSWEGO RIVER BASIN
HIGINBOTHAM BROOK WATERSHED PROJECT
NY 703
DEC #103C-4286
PHASE I INSPECTION REPORT

TABLE OF CONTENTS

PHASE I REPORT
NATIONAL DAM SAFETY PROGRAM

Name of Dam:	Higinbotham Brook Watershed Project I.D. No. NY 703
State Located:	New York
County Located:	Madison
Stream:	Higinbotham Brook (tributary of Oneida Creek and Oswego River)
Date of Inspection:	July 24, 1979

ASSESSMENT

The examination of documents and visual inspection of the Higinbotham Brook dams and appurtenant structures did not reveal conditions which constitute a hazard to human life or property.

The total discharge capacity of the spillways is adequate for the Probable Maximum Flood (PMF).

The following remedial actions are required during this construction season:

1. Repair the erosion areas on and in the vicinity of Dam 1. Seed and mulch all unprotected areas to establish erosion resistant vegetation;

2. Repair the eroded area in the downstream channel;

3. Periodically monitor the slopes in the reservoir area and repair as required;

4. Provide a program of seeding and mulching of all earth surfaces on the dams and in the reservoir area to establish erosion protection material. If vegetation cannot resist long term erosion action, an alternate method may be required;

5. Provide a program of periodic inspection and maintenance of the dams and appurtenances. This program must include yearly operation and lubrication of the reservoir drain system. Document this information for future reference;

6. Develop an emergency action plan.

George Koch

George Koch
Chief, Dam Safety Section
New York State Department of
Environmental Conservation
NY License No. 45937

Approved By:

Clark H. Benn

Col. Clark H. Benn
New York District Engineer

Date:

25 September 79

Overview of Higinbotham Brook Watershed Project
Dam 1 in foreground & Dam 2 in background
Photo #1

Overview of Dam 3
Photo #2

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM
HIGINBOTHAM BROOK WATERSHED PROJECT
I.D. NO. NY 703
DEC #103C-4286
OSWEGO RIVER BASIN
MADISON COUNTY, NEW YORK

SECTION 1: PROJECT INFORMATION

1.1 GENERAL

a. Authority

The Phase 1 inspection reported herein was authorized by the Department of the Army, New York District, Corps of Engineers, to fulfill the requirements of the National Dam Inspection Act, Public Law 92-367.

b. Purpose of Inspection

Evaluation of the existing conditions of the subject dam to identify deficiencies and hazardous conditions, determine if they constitute hazards to life and property and recommend remedial measures where necessary.

1.2 DESCRIPTION OF PROJECT

a. Description of the Dam and Appurtenant Structures

The Higinbotham Brook Watershed Project consists of 1 main dam and 2 smaller closure dams designed to reduce floodwater damage. The maximum heights of the dams are: Dam 1 = 53 feet, Dam 2 - 14 feet, and Dam 3 = 21 feet. The structures are homogeneous compacted earth fill from on site borrow areas, composed of gravels, silts, and sands, with minor amounts of oversize material greater than 6 inches. A vegetated auxiliary spillway, excavated between Dams 1 and 2, provides temporary flood storage below its crest, and will contain the runoff produced by a 100 year frequency storm.

An internal drainage system is located beneath the downstream portion of earth fill on Dam 1 to control the phreatic surface and to provide a safe outlet for foundation seepage. A cut-off trench was excavated along the centerline of each dam to reduce seepage.

The principal spillway, located at Dam 1, is composed of a rectangular drop inlet structure (2 stage reinforced concrete riser), a 30-inch diameter reinforced concrete pipe beneath the dam, and a plunge pool to dissipate energy at the conduit outlet. An 18-inch diameter reinforced concrete pipe, with a manually operated slide gate, the controls of which are located atop the riser; serve as the reservoir drain system.

Further information concerning the dams and appurtenances is included in Appendix G, Drawings.

b. Location
The dams are located on Higinbotham Brook, a tributary of Oneida Creek and the Oswego River, approximately 2000 feet southwest of the City of Oneida.

c. Size Classification
Dam 1 is 53 feet high and is classified as "intermediate" in size (40 to 100 feet in height). Dam 2 and 3 are classified as "small" in size (less than 40 feet in height).

d. Hazard Classification
The dams are classified as high hazard, because of their location above the City of Oneida.

e. Ownership
The dams are owned and operated by the County of Madison, New York.

f. Purpose of the Dams
The dams are floodwater retarding structures.

g. Design and Construction History
The dams were designed and construction supervised by the U.S. Department of Agriculture, Soil Conservation Service (SCS). Construction of the dam was completed in 1978. The SCS office, located in Syracuse, has all design and construction information.

h. Normal Operating Procedures
Normal flows are discharged through the principal spillway. This structure has sufficient capacity to store and discharge a 100 year flood. Flow in excess of the 100 year storm will be discharged through the auxiliary spillway located between Dam 1 and 2.

1.3 PERTINENT DATA

a. Drainage Area (acres)	512
Height of dam (feet)	Dam 1 = 53, Dam 2 = 14, Dam 3 = 21
b. Discharge at Dam Site (cfs)	
Maximum known Flood	Unknown, built 1978
Spillway at Design Pool (El. 532.3)	766
Spillway at Maximum Pool (El. 536.4)	4141
Maximum Capacity of Reservoir drains	18
Total Discharge, Max. Pool	4141
Average Daily Discharge	Varies
c. Elevation (ft. above MSL-Datum)	
Top of Dam	536.4
Design Pool	523.3
Auxiliary Spillway Crest	530.0
Invert of Low Stage Inlet -- Riser	513.1
Invert Reservoir Drain Inlet	486.4
Principal Spillway Crest	528.0

d. Reservoir (Acres)

Surface Area at Top of Dam	15
Surface Area at Crest of Auxiliary Spillway	10
Surface Area at Principal Spillway Crest	8.8

e. Storage (Acre-feet)

Spillway Crest	73
Auxiliary Spillway Crest	92
Top of Dam	176

f. Dam

Type: Homogeneous earth keyed earth cutoff trench and internal drains.

Length (ft.)	Dam 1 = 185, Dam 2 = 235, Dam 3 = 180
Upstream slope	Dam 1 = 1:3.5, Dam 2 & 3 = 1:3.0
Downstream slope	Dam 1 = 1:2.5 & 1:3.0, Dam 2 = 1:3.0 & 1:2.5, Dam 3 = 1:2.5
Crest Width, ft.	Dam 1 = 18, Dam 2 & 3 = 12

g. Spillway

Type: Ungated reinforced concrete 2 stage drop inlet 2.5' x 7.5', 283' of 30" reinforced concrete pipe, plunge pool.

Weir Length, ft.	15.0

h. Auxiliary Spillway (Emergency)

Type: Grass-lined channel having trapezoidal cross-section.

Bottom Width (ft.)	80
Side Slopes	1:3.0
Length of Level Section (in profile) (ft.)	50
Exit Slope (ft./ft.)	0.029

i. Reservoir Drain

Type: 18-inch diameter reinforced concrete pipe with reinforced concrete inlet.

Control: Manually operated vertical slide gate mounted inside principal spillway riser.

SECTION 2: ENGINEERING DATA

2.1 GEOLOGY

The Higinbotham Brook Watershed Project Dams are located in the Erie-Ontario lowlands near the boundary of the Appalachian Uplands. This province encompasses the relatively low, flat areas lying south of Lake Erie and Lake Ontario and extending up the Black River Valley. From the lakes, the land rises gently southward. The simple erosional topography has been modified substantially by glacial deposition. Bedrock, which was observed outcropping in the reservoir area, is Vernon shale of the Silurian Period (435 - 395 million years ago). Surficial soils are of the Wampsville series. These soils were formed of glaciofluvial deposits from mostly limestone and reddish shale. These deposits occur on alluvial fans, outwash plains, terraces, and kames. The soils are well drained, runoff is medium, and internal drainage is medium to rapid.

2.2 SUBSURFACE INVESTIGATION

A subsurface investigation was conducted by SCS in 1975. This program consisted of 6 drill holes and 29 test pits at locations along the dams, auxiliary spillway, structural elements, and borrow area. Applicable subsurface information is included in Appendix G, Drawings #24 and 25.

In general, the soils in the vicinity of the dams are of glacial outwash origin and are silty sand, clayey with some gravel (maximum 3" diameter) and silty gravel, clayey with some boulders (maximum size 10") over weathered Vernon shale over Vernon shale. Depth to shale bedrock is variable.

2.3 EMBANKMENT AND APPURTENANT STRUCTURES

The dam was designed and constructed under the supervision of SCS. "As-built" drawings of this project are on file at the SCS office in Syracuse. Selected drawings of the dams and appurtenances are included in Appendix G. The design of the watershed project includes 3 homogeneous compacted earth dams (Height: Dam 1 = 53 ft., Dam 2 = 14 ft., Dam 3 = 21 ft.); each with a compacted earth cutoff trench, and Dam 1 containing internal drains parallel to the axis of the dam and beneath its centerline. A reinforced concrete riser and 30-inch diameter reinforced concrete pipe serves as the principal spillway. A vegetated earth channel between Dam 1 and 2 serves as an auxiliary spillway.

2.4 CONSTRUCTION RECORDS

Complete construction records are available from the SCS office in Syracuse. Eight anti-seep collars were installed instead of the 9 originally specified for the principal spillway. Seepage was encountered at the downstream toe of Dam 1 during construction. Riprap and filter material was placed to control the seepage. To prevent the development of erosion, riprap was placed at the right (southeast) abutment of Dam 3 on both the upstream and downstream side of the abutment.

2.5 OPERATION RECORD

Since the dam is an ungated floodwater retarding structure, no operating records are maintained regarding water levels. During periods of extreme rainfall, SCS personnel do monitor the dam and reservoir.

2.6 EVALUATION OF DATA

The data presented in this report has been compiled with the aid of information obtained from Mr. Donald W. Lake, Jr., Head of the SCS Design Section in Syracuse, New York. This information appears to be adequate and reliable for Phase 1 inspection purposes.

SECTION 3: VISUAL INSPECTION

3.1 FINDINGS

a. General

Visual inspection of the Higinbotham Brook Watershed Project Dams was conducted on July 24, 1979. The weather was partly cloudy and the temperature ranged in the 80's. The reservoir water surface was approximately the invert elevation of the low stage inlet on the principal spillway riser (elevation 513.1).

b. Dam 1

No signs of distress were observed in the earth embankment and no evidence of uncontrolled seepage, misalignment, sloughing, subsidence, depressions, surface cracking, or undesirable growth were noted in connection with the embankment. While no riprap was in use on the upstream slope for wave protection, little erosion in this area was apparent. (See photos 1, 3 & 7) Erosion was apparent at the right (southeast) abutment contact of the upstream face to a depth of approximately 1 foot (See photo #6). Erosion was also evident on the slopes of the abutments on the downstream side of the dam where stripping was conducted prior to embankment placement (See photos #3 & 8). Seepage was apparent at the toe of the dam flowing at a rate of 2 to 5 gallons per minute through riprapped covered filter material. This flow was exiting into the plunge pool on the right side of the outlet pipe (See photos #8 & 10). No migration of fines was noted. This seepage is reported to be the result of seepage points encountered at the base of the dam during construction. The seepage seems to be adequately controlled by the filter material and riprap protection.

Two 8-inch diameter internal drains encased in a 2 zoned drain fill material provide control of the phreatic surface and foundation seepage. The left drain was discharging at a rate of approximately 3 to 5 gallons per minute. (See photos #8 & 9)

c. Principal Spillway at Dam 1

The principal spillway consists of a vertical drop inlet structure, a reinforced concrete pipe through the embankment, a plunge pool at the toe of the embankment, and an outlet channel. These components appear to be in satisfactory condition. (See photos #3, 7, 8 & 9)

d. Auxiliary Spillway

The auxiliary spillway is a vegetated earth channel located between Dam 1 and 2. The vegetation in the channel had not been mowed since seeding. The spillway channel should be mowed in order to establish a good stand of grass. The channel seems to be stable and constructed according to design. (See photos #1, 3, 4 & 5)

e. Dam 2

This dam is a low closure embankment adjacent to the auxiliary spillway. Its purpose is to direct flow into the auxiliary spillway and away from the adjacent hospital (See photos #3, 4 & 5). The riprap placed at the junction of the dam and auxiliary spillway is used to prevent erosion of the dam by auxiliary

spillway flows. The dam appears to be stable with no signs of distress, seepage, erosion, misalignment, sloughing, subsidence, depressions, surface cracking, or undesirable growth noted.

f. Dam 3

This dam is a closure embankment located approximately 900 feet southwest of Dam 1 (See photo #2). There are no signs of distress in the earth embankment and no evidence of seepage, misalignment, sloughing, subsidence, depressions, surface cracking, or undesirable growth were noted. Riprap was placed on the original grade at the right (southeast) abutment on both the upstream and downstream sides of the dam to provide erosion protection of the abutment slopes.

g. Reservoir Drain

An 18-inch diameter reinforced concrete pipe with a manually operated vertical slide gate serves as the reservoir drain system. This system is reported to be operational.

h. Downstream Channel

The downstream channel below the plunge pool is a vegetated earth channel. A reinforced box culvert transmits the flow of the channel beneath the highway embankment of N.Y. Route #5. (See photo #12) Headward erosion, approximately 2 feet in depth, was evident in the channel about 200 feet below the plunge pool (See photo #11).

i. Reservoir

The immediate reservoir area contains very steep side slopes and sloughing of these slopes was apparent (See photo #14). No sedimentation problems were reported.

During construction, what appeared to be surface cracking developed in numerous locations particularly along unvegetated cut slopes. (See photo #13) Extensive testing was conducted to determine if the soils were of a dispersive nature. The testing indicated that the soils were not dispersive and after further study, it was concluded by SCS that the cracking was the process of erosion in the fine grained soils. Additional information concerning this testing is included in Appendix F, Stability Analysis. The erosion observed during the inspection does not appear to be significant providing vegetation is initiated.

3.2 EVALUATION

The problem areas observed during the inspection are considered minor in nature; requiring only remedial action or monitoring of existing conditions. These areas are as follows:

1. Erosion of the right upstream abutment contact and original grade above the abutment contacts on the downstream face of Dam 1. These areas require repair and seeding, and mulching to establish erosion resistant vegetation. Riprap may be required if vegetation cannot withstand the erosive forces;

2. Headward erosion in the downstream channel requires repair and erosion protection material;

3. The very steep slopes in the reservoir area and the minor erosion of the adjacent cut slopes should be monitored periodically with repairs initiated as required;

4. The erosive characteristics of the surficial soils are such that vegetative cover is required to resist even minor erosion. Periodically inspect the dams and surrounding watershed to identify problem areas. Immediately provide seeding and mulching of all areas in which vegetation is not developing properly;

5. Provide a program of periodic inspection and maintenance of the dams and appurtenances. This program must include yearly operation and lubrication of the reservoir drain system. Document this information for future reference. Also, develop an emergency action plan for notification of downstream residents and the proper governmental authorities.

SECTION 4: OPERATION AND MAINTENANCE PROCEDURES

4.1 PROCEDURES

The normal water surface elevation is approximated by the low stage inlet elevation. Downstream flows are limited by the 30-inch diameter principal spillway pipe, except during periods of extremely heavy runoff when the auxiliary spillway is in service. The dam provides 92 acre feet of flood storage up to the crest of the auxiliary spillway.

4.2 MAINTENANCE OF THE DAM

The dams are maintained by the County of Madison, New York. Maintenance is not considered satisfactory as evidenced by the erosion of numerous slopes in the vicinity of Dam 1 and in the reservoir area.

4.3 WARNING SYSTEM IN EFFECT

There is no warning system in effect or in preparation.

4.4 EVALUATION

The dams and appurtenant structures have not been maintained in a satisfactory condition as noted in "Section 3: Visual Inspection".

SECTION 5: HYDROLOGIC/HYDRAULIC

5.1 DRAINAGE AREA CHARACTERISTICS

Delineation of the watershed of the Higinbotham Brook Watershed Project was made using the USGS 7.5 minute quadrangle for Oneida, New York. The watershed consists of woodlands and fields situated in a rural section. Relief ranges from shallow to moderate, except in the immediate reservoir area where numerous slopes are very steep. The drainage area is 512 acres or 0.8 square miles.

5.2 ANALYSIS CRITERIA

The analysis of the spillway capacity of the dam and storage of the reservoir was performed using the Corps of Engineers HEC-1 computer program, incorporating the "Snyder Synthetic Unit Hydrograph" method and the "Modified Puls" flood routing procedure. The spillway design flood selected for analysis was the PMF in accordance with the recommended "Guidelines" of the U.S. Army Corps of Engineers.

5.3 SPILLWAY CAPACITY

The principal and auxiliary spillways are uncontrolled structures. The principal spillway operates under weir or orifice flow conditions depending upon the floodwater inflow to the reservoir pool. The auxiliary spillway was analyzed as a broad-crested weir having a discharge coefficient (c) of 3.087.

The spillways have sufficient capacity for discharging the peak outflow from the PMF. For this storm, the peak inflow is equal to the peak outflow which is calculated to be 1723 cfs. When the spillways are discharging the peak outflow, the water surface will be 3.8 feet below the top of the dam. Additional information concerning this analysis is included in Appendix D.

5.4 RESERVOIR CAPACITY

Normal flood control storage capacity of the reservoir between the low stage inlet of the principal spillway and the auxiliary spillway is 69.7 acre-feet, which is equivalent to a runoff depth of 1.6 inches over the drainage area. Surcharge storage capacity to the maximum high water elevation is an additional 83.8 acre-feet, which is equivalent to a runoff depth over the drainage area of 2.0 inches. The total storage capacity of the dam is 153.5 acre-feet, which is equivalent to 3.6 inches of direct runoff.

5.5 FLOODS OF RECORD

Since the dam was completed in 1978, no significant floods have occurred which can be reported.

5.6 OVERTOPPING POTENTIAL

Analysis indicates the total discharge capacity is sufficient to prevent overtopping of the dam from the PMF.

5.7 EVALUATION

The Higinbotham Brook Watershed Project dams have sufficient capacity to impound and adequately discharge floodwaters expected to result from the PMF.

SECTION 6: STRUCTURAL STABILITY

6.1 EVALUATION OF STRUCTURAL STABILITY

a. Visual Observations

No signs of distress or instability were observed in connection with the earth embankments.

b. Design and Construction Data

A stability analysis was conducted by SCS during design of Dam 1. The analyses were performed using the Modified Swedish Circle method. The soil parameters assumed were γ_d = 105 pcf, γ_m = 120 pcf, γ_{sat} = 128.5 pcf, ϕ = 14°, and C = 350 psf. The results of the analyses are as follows:

Condition	Minimum Factor of Safety
1. Upstream Slope = 1:3.5, drawdown from 10 feet above permanent pool, 10 ft. wide berm at el. 513.1;	1.27
2. Downstream Slope = 1:2.5 changing to 1:3.0, steady state seepage with drain, 12 ft. wide berm at el. 513.1	1.41

The calculated factor of safety for the upstream slope during rapid drawdown is in excess of the minimum factor of 1.2 recommended by the Corps of Engineers. The calculated factor of safety for the downstream slope during steady state seepage conditions is slightly below the value of 1.5 recommended by the Corps of Engineers. Since the assumed conditions of the analysis were for a reservoit level 10 feet above normal, the resulting factors of safety would be lower than that calculated at normal pool. In addition, this factor of safety in the analysis is not significantly lower than the recommended value. The dam is, therefore, considered to have adequate factors of safety for stability.

A summary of the analysis is included in Appendix F.

c. Post Construction Changes

Eight anti-seep collars were installed instead of the 9 originally specified for the principal spillway conduit. Also, seepage was encountered at the downstream toe of Dam 1 during construction. To control this seepage, a blanket of filter material and riprap was installed near the outlet of the principal spillway conduit.

In addition, riprap was placed on the right (southeast) abutment of Dam 3 on both the upstream and downstream abutment slopes to control erosion.

d. Seismic Stability

The dam is located in Seismic Zone 1. Therefore, a seismic analysis is not warranted.

SECTION 7: ASSESSMENT/RECOMMENDATIONS

7.1 ASSESSMENT

a. Safety

The Phase 1 inspection of the Higinbotham Brook Watershed Project did not reveal conditions which constitute a hazard to human life or property. The earth embankments are not considered to be unstable and appear capable of retarding floodwaters resulting from the PMF.

b. Adequacy of Information

Information reviewed for Phase 1 inspection purposes is considered adequate.

c. Need for Additional Investigations

No additional investigations are required at this time.

7.2 RECOMMENDED MEASURES

a. Repair the areas in which erosion has occurred on Dam 1 (right abutment upstream face) and conduct seeding and mulching operations in all unprotected areas to establish erosion resistant vegetation.

b. Repair the eroded area of the downstream channel with erosion protection material.

c. Periodically monitor the slopes in the reservoir area and repair as required.

d. Provide a program of periodic inspection of all earth surfaces on the dams and in the reservoir area. Where vegetation is not satisfactorily resisting erosion due to insufficient ground cover, provide a seeding and mulching program to establish erosion resistant vegetation. If established vegetation cannot resist erosion, an alternate erosion protection material may be required.

e. Provide a program of periodic inspection and maintenance of the dams and appurtenances. This program must include yearly operation and lubrication of the reservoir drain system. Document this information for future reference.

f. Develop an emergency action plan for notification of downstream residents and the proper governmental authorities.

APPENDIX A

PHOTOGRAPHS

Dam 1
Photo #3 A & B

Auxiliary Spillway (left) and Upstream Face of Dam 2 (right)
Photo # 4 A & B

Dam 2 - Crest & Downstream Face
Auxiliary Spillway in Background
Photo #5

Dam 1 - Upstream Face Right Abutment Erosion
Photo #6

Dam 1 - Principal Spillway Riser
Photo #7

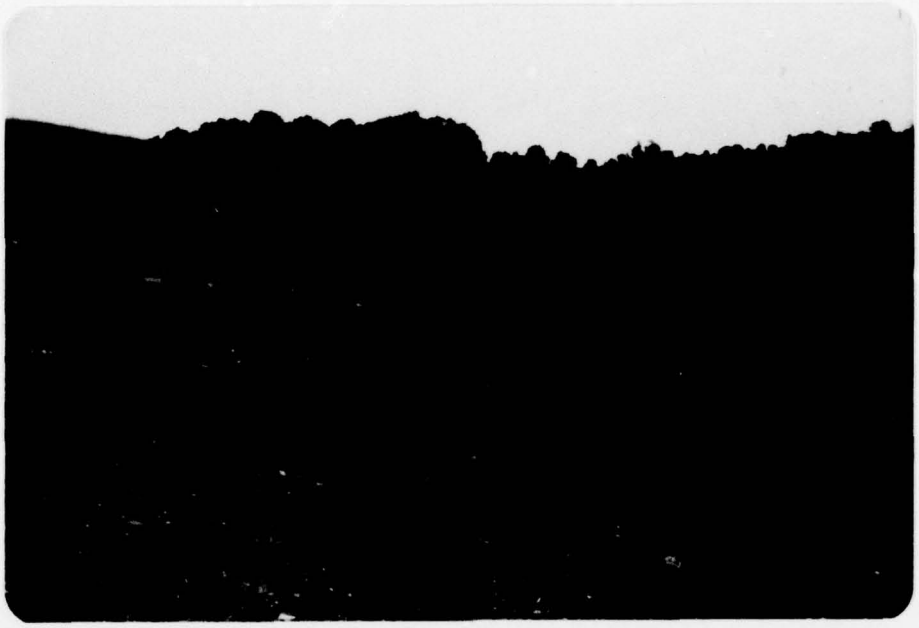
Dam 1 - Outlet of Principal Spillway Conduit
Photo #8

Dam 1 - Principal Spillway Conduit
Note Drainpipe
Photo #9

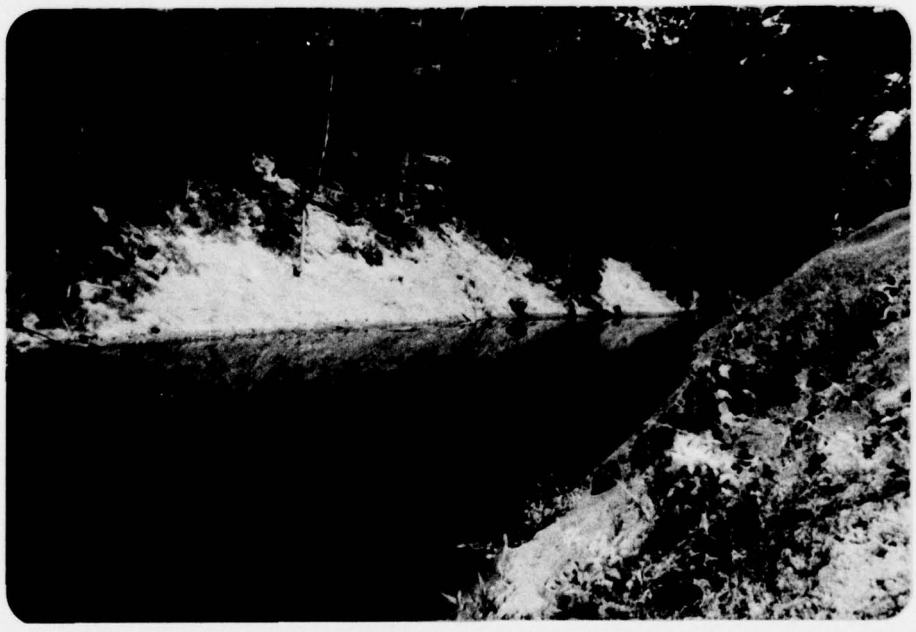
Dam 1 - Seepage Point in Plunge Pool
Right Side of Conduit
Photo #10

Downstream Channel, Dam 1 in Background
Note Channel Erosion
Photo #11

Downstream Channel Looking Downstream Toward N.Y. Rt. #5
Photo #12



Cut Slope in Reservoir Area
Note Erosion and Sparse Vegetation
Photo #13



Steep Slopes in Reservoir Area
Note Shale Outcrop at Right
Photo #14

APPENDIX B

ENGINEERING DATA CHECKLIST

Check List
Engineering Data
Design Construction Operation

Name of Dam Higginbotham

I.D. # NY 703

DEC # 103 C - 4286

Item	Remarks		
	Plans	Details	Typical Sections
Dam	Yes	Yes	Yes
Spillway(s)	"	"	"
Outlet(s)	"	"	"
Design Reports	Yes by SCS in DEC file		
Design Computations	SCS has all info		
Discharge Rating Curves	SCS has all info		
Dam Stability	Yes		
Seepage Studies	SCS has all info		
Subsurface and Materials Investigations	Yes see plans		

Item	Remarks
Construction History	Constructed 1978 by Santaro & Taroson Inc Syracuse NY
Surveys, Modifications, Post-Construction Engineering Studies and Reports	Yes, surface cracking a) exposed earth cuts thought to be dispersive clays - testing did not indicate this - cracking thought to be erosion b) fine material from decomposed shale soils
Accidents or Failure of Dam Description, Reports	NONE
Operation and Maintenance Records Operation Manual	NONE

APPENDIX C

VISUAL INSPECTION CHECKLIST

VISUAL INSPECTION CHECKLIST

1) Basic Data

a. General

Name of Dam Higinbotham Brook Watershed Project

I.D. # NY 703 DEC # 103C-9286

Location: Town Oneida County Madison

Stream Name Higinbotham Brook

Tributary of Oneida Ck. and Oswego River

Longitude (W), Latitude (N) 75° 39' 21" | 43° 04' 38"

Hazard Category C High

Date(s) of Inspection July 29 1979

Weather Conditions Partly Cloudy 80's

b. Inspection Personnel Kenneth Hermer Bob McCarty

Donald Lake (SCS)

c. Persons Contacted Donald W. Lake, J.E Head Design section

SCS. Syracuse NY Tel (315) 423-5505

d. History:

Date Constructed 1978

Owner County of Madison, N.Y.

Designer Soil Conservation Service

Constructed by Santaro & Taroson Inc
Syracuse NY

2) Technical Data

Type of Dam Earth Embankment Dam #1 Primary Dam #2 & 3 closure dikes

Drainage Area 0.8 sq. mi. (512 acres)

	Dam 1	Dam 2	Dam 3		Dam 1	Dam 2	Dam 3
Height	53	19	21	Length	186	235	180

Upstream Slope Dam #1 1:3.5 . Downstream Slope 1:2.5 then 1:3 at base

Dam #2 1:3.0 1:3.0 and 1:2.5

Dam #3 1:3.0 " 1:2.5 " "

2) Technical Data (Cont'd.)

External Drains: on Downstream Face None @ Downstream Toe None

Internal Components:

Impervious Core None

Drains Yes

Cutoff Trench Yes

Grout Curtain None

3) Embankment

a. Crest

(1) Vertical Alignment good condition

(2) Horizontal Alignment good condition

(3) Surface Cracks none

(4) Miscellaneous

b. Slopes

(1) Undesirable Growth or Debris, Animal Burrows none

(2) Sloughing, Subsidence or Depressions erosion at right abutment contact on upstream side of dam ≈ 1 foot deep

(3) Slope Protection Dam 1: at toe near plunge pool, Dam 2: on downstream face near corner of auxiliary spillway, Dam 3: at right abutment on both upstream and downstream junctions for erosion protection

(4) Surface Cracks or Movement at Toe none evident

(5) Seepage Dam 1: Seepage along right side of plunge pool at toe of riprap flow: 2-5 gpm, fines not observed; Dam 2: None evident; Dam 3: none evident

(6) Condition Around Outlet Structure generally good condition

c. Abutments

Some erosion and sloughing of exposed soil and shale where excavation occurred in original grade of both abutments on downstream side of dam #1

(1) Erosion at Embankment and Abutment Contact on upstream slope right abutment Dam 1

(2) Seepage along Contact of Embankment and Abutment none evident

(3) Seepage at toe or along downstream face in plunge pool riprap right side of outlet pipe flow 2-5 gpm SCS riprapped due to abutment seepage during construction

d. Downstream Area - below embankment

narrow channel

(1) Subsidence, Depressions, etc. headward erosion ≈ 2 feet deep due to flow of outlet channel ≈ 200 feet below toe of dam

(2) Seepage, unusual growth none evident

(3) Evidence of surface movement beyond embankment toe none evident

(4) Miscellaneous

e. Drainage System

2 8" diameter internal drain pipes parallel to principal spillway surrounded by 2 zoned drain fill + short chimney drain (19')

(1) Condition of relief wells, drains, etc. good condition of drains

(2) Discharge from Drainage System Left drain flowing approx 35 gpm

4) Instrumentation

(1) Monumentation/Surveys see plans for survey data

(2) Observation Wells none

(3) Weirs none

(4) Piezometers none

(5) Other

5) Reservoir

a. Slopes very steep in immediate reservoir area (normal pool) shale bedrock or bedrock controlled

b. Sedimentation no problems reported

6) Spillway(s) (including tail race channel)

a. General Standard SCS Design Principal Spillway & Auxiliary spillway on right side of Dam #1

b. Principle Spillway good condition no debris

c. Emergency or Auxiliary Spillway good condition no cutting of vegetation to encourage growth of new seeded areas after original construction last year

d. Condition of Tail race channel Riprapped plunge pool & part of outlet channel with filter material beneath to collect sumps encountered during construction

headward erosion has started ≈ 200 feet from toe of Dam #1

e. Stability of Channel side/slopes

headward erosion of outlet channel = 2 feet deep moving toward toe of dam

7) Downstream Channel

a. Condition (debris, etc.) no debris, headward erosion of downstream channel = 2 ft. drop & 200 ft below toe of dam

b. Slopes steep where eroded

c. Approximate number of homes village of Oneida below NY Rt #5 concrete box culvert under Rt #5

8) Miscellaneous

9) Structural

a. Concrete Surfaces good condition

b. Structural Cracking none evident

c. Movement - Horizontal & Vertical Alignment (Settlement) no problems observed

d. Junctions with Abutments or Embankments good condition

e. Drains - Foundation, Joint, Face internal drains in good condition

f. Water passages, conduits, sluices good condition & reported operational

g. Seepage or Leakage none reported to concrete or structural elements.

h. Joints - Construction, etc. good condition

i. Foundation appears to be no problem

j. Abutments N/A

k. Control Gates reported operational

l. Approach & Outlet Channels no structural problems

m. Energy Dissipators (plunge pool, etc.) plunge pool - good condition

n. Intake Structures good condition

o. Stability appears good

p. Miscellaneous

APPENDIX D

HYDROLOGIC/HYDRAULIC

ENGINEERING DATA AND COMPUTATIONS

CHECK LIST FOR DAMS
HYDROLOGIC AND HYDRAULIC
ENGINEERING DATA

AREA-CAPACITY DATA:

	Elevation (ft.)	Surface Area (acres)	Storage Capacity (acre-ft.)
1) Top of Dam	536.9	15.0	176.2
2) Design High Water (Max. Design Pool)	532.3	11.8	120.2
3) Auxiliary Spillway Crest	530.0	10.0	92.9
4) Invert of Low Stage inlet - riser	513.1	2.5	22.7
5) Service Spillway Crest	528.0	8.8	73.4

DISCHARGES

	Volume (cfs)
1) Average Daily	Varies
2) Spillway @ Maximum High Water	4191
3) Spillway @ Design High Water	766
4) Spillway @ Auxiliary Spillway Crest Elevation	140
5) Low Level Outlet	18
6) Total (of all facilities) @ Maximum High Water	4191
7) Maximum Known Flood	Unknown but 1978

CREST: ELEVATION: 536.9 Top of Dam

Type: Earth Embankment

Width: 18' Dam 1, 12' Dam 2&3 Length: Dam 1: 185', Dam 2: 235', Dam 3: 180'

Spillover Principal spillway - weir length 15 ft., 2.5 x 7.5 rectangular riser

Location center of upstream slope - principal spillway in Dam #1
At right abutment of Dam #1 - Auxiliary spillway

SPILLWAY:

PRINCIPAL		EMERGENCY
crest 528.0, low stage 513.1	Elevation	530.0
Uncontrolled Reinforced Concrete, 2 stage	Type	Vegetated Earth
2.5' x 7.5'	Width	80', 1:3 side slopes
	Type of Control	
Uncontrolled	Uncontrolled	Uncontrolled
	Controlled:	
—	Type (Flashboards; gate)	—
1	Number	1
weir length 15 ft.	Size/Length	80' wide
	Invert Material	Earth
	Anticipated Length of operating service	100 year storm
283.33' of 30" Reinforced Conc. pipe	Chute Length	427
14.9 ft.	Height Between Spillway Crest & Approach Channel Invert (Weir Flow)	—

OUTLET STRUCTURES/EMERGENCY DRAWDOWN FACILITIES:

Type: Gate ↘ Sluice _____ Conduit ↘ Penstock _____

Shape : Gate: 24" Flat frame Slide Gate Conduit Round Reinf. Conc. Pipe

Size: 24" gate 18" diameter

Elevations: Entrance Invert 486.4

Exit Invert 479.0

Tailrace Channel: Elevation 476.5

HYDROMETEROLOGICAL GAGES:

Type : NONE

Location: _____

Records:

Date - _____

Max. Reading - _____

FLOOD WATER CONTROL SYSTEM:

Warning System: NONE

Method of Controlled Releases (mechanisms):

None except for Manually Operated Reservoir Drain Slide Gate

DRAINAGE AREA: 512 Acres

DRAINAGE BASIN RUNOFF CHARACTERISTICS:

Land Use - Type: Forest & Farm Lands

Terrain - Relief: Moderate to Shallow slopes

Surface - Soil: Glacial till or weathered Vernon shale

Runoff Potential (existing or planned extensive alterations to existing (surface or subsurface conditions)

None

Potential Sedimentation problem areas (natural or man-made; present or future)

None

Potential Backwater problem areas for levels at maximum storage capacity including surcharge storage:

None

Dikes - Floodwalls (overflow & non-overflow) - Low reaches along the Reservoir perimeter:

Location: Dam 2 & 3 used to control flow areas east & south east of Dam #1

Elevation: Same as dam #1 536.9

Reservoir:

Length @ Maximum Pool N/A (Miles)

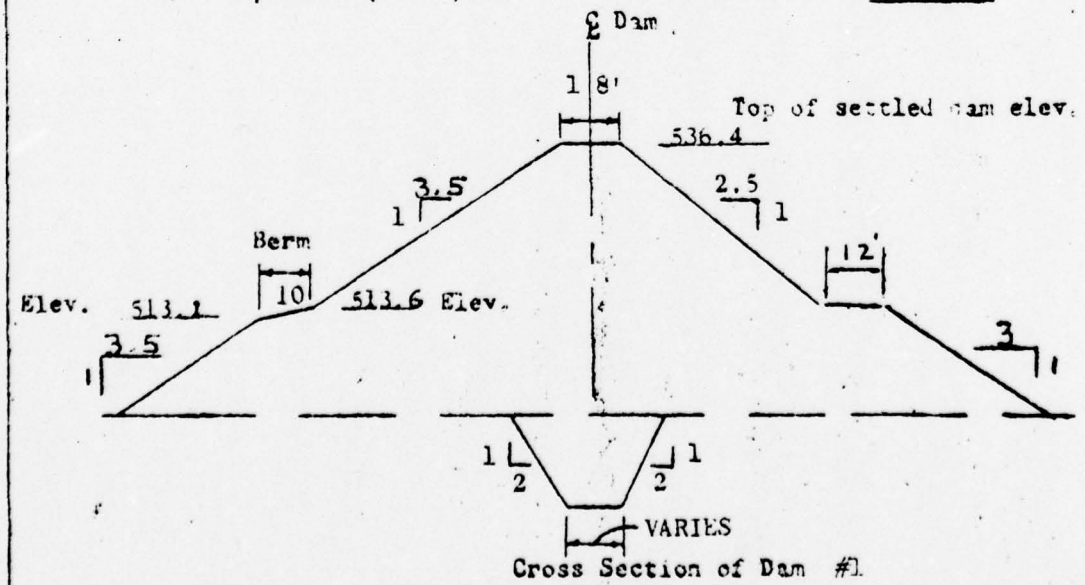
Length of Shoreline (@ Spillway Crest) N/A (Miles)

U. S. DEPARTMENT OF AGRICULTURE — SOIL CONSERVATION SERVICE

DESIGN REPORT SUMMARY

I. Watershed data		
A. Structure class	C	
B. Drainage area	512	Ac.
C. Time of concentration - T_c	1.0	Hrs
D. Hydrologic curve number - C_n Moisture Condition II	77	
II. Principal spillway		
A. Conduit		
1. Size (I.D.)	30	In.
2. Length	252	Ft.
B. Riser		
1. Size	2.5x7.5	Ft.
2. Height (floor to crest)	43	Ft.
C. Weir length	15	Ft.
D. Reservoir drain size	16	In.
E. Type of energy dissipator	Plunge Pool	
III. Emergency spillway		
A. Width	80	Ft.
B. Side slopes	3:1	
C. Length of level section	50	Ft.
D. Exit slope	0.029	Ft./Ft.
E. Maximum velocity - in exit section (ESH)	7.0	Ft./Sec.
F. Duration of flow (ESH) through emergency spillway	4.5	Hrs.
G. Frequency of use	≤ 1	

IV. Earth fill	Dam 1	Dam 2	Dam 3	
A. Height (ft.)	53	14	21	
B. Volume (C.Y.)				45200 (3 dams)
C. Compaction (Class)				



Cross Section of Dam #1

U.S. DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE

ELEMENT OF STRUCTURE	DETERMINING FACTOR	ELEV FT	SURFACE AREA AC	STORAGE		INFLOW		PEAK OUTFLOW CFS
				AF	INCHES	VOL* INCHES	RATE CFS	
Invert of Orifice	100-year submerged sediment accumulation	513.1	2.5	22.7 1/	0.53 1/			
Crest of Riser	71 Ac. Ft. Evaluation storm storage plus 100-year total sediment	528.0	8.8	73.4 2/	1.72 2/			18
Crest of Emergency Spillway	100-year frequency storm AMC II	530.0	10.0	92.4 2/	2.17 2/			140
Design High Water	ES-1020 Sheet 2 of 5**	532.3	11.8	120.2 2/	2.82 2/	5.92	1408	766
Top of Dam	ES-1020 Sheet 3 of 5**	536.4	15.0	176.2 2/	4.13 2/	18.58	4470	4341

* Volume expressed in inches of runoff from controlled watershed of 512 acres

** Refer to Hydrologic criteria in National Engineering Memorandum SCS-27 (Rev.)

1/ Does not include 4.1 AF of sediment allocated to flood pool

2/ Does not include 26.8 AF of sediment storage

Note this is 35% PMP

DESIGN SECTION, SYRACUSE, N.Y

Sheet 3 of 7

Higinbothan Brook DAM
NY 703

D.A. = Drainage area in square miles

L = River mileage from the given station to the upstream limits of the drainage area

LCA = River mileage from the station to the center of gravity of the drainage area

PMP = Probable Maximum Precipitation in inches

t_p = Lag time from mid-point of unit rainfall duration, t_r, to peak of unit hydrograph, in hours.

t_r = Unit rainfall duration, equal to $\frac{t_p}{550}$, in hours.

C_t = Coefficient depending upon units and drainage basin characteristics

t_R = Unit rainfall duration other than standard unit, t_r adopted in specific study, in hours.

t_{pR} = Lag time from mid-point of unit rainfall duratic t_R, to peak of unit hydrograph, in hours

D.A = 0.8 square miles, L = 1.1 miles, LCA = .6 miles

PMP = 19 inches C_t = 2,

C_p = 0.625 from average 640 C_p = 400

$t_p = C_t (L \cdot L_{CA})^{0.3} = 2(1.1 \times .6)^{.3} = 1.77$ hours

$t_r = \frac{t_p}{5.5} = \frac{1.77}{5.5} = .32$ hours (Use 1 hr. hydrograph)

$t_{pR} = t_p + 0.25(t_R - t_r) = 1.77 + .25(1 - .32) = 1.94$ hrs.

From HMR 33 - Figure 2, Depth - Area - Duration

6 hour % 111 = , 12 hour % = 123

24 hour % 133 = , 48 hour % = 142

```
**************************************
FLOOD HYDROGRAPH PACKAGE (HEC-1)
DAM SAFETY VERSION      JULY 1978
  LAST MODIFICATION  26 FEB 79
  MODIFIED FOR HONEYWELL APR 79
**************************************

****************************************
THIS PROGRAM IS CURRENTLY BEING MODIFIED
TO RUN ON THE USGS HONEYWELL SYSTEM

PLEASE REPORT ANY UNUSUAL OPERATING PROBLEMS
TO MIKE TILLSON (RM. 423) PH. 7-5555
****************************************
    1          A    HIGHBURTH... NY 703  DEC  1030-4286          OSWEGO RIVER BASIN
    2          A    SCS FLOOD CONTROL STRUCTURE                   MADISON COUNTY
    3          A                                                  PMF - SNYDER UH
    4          B   100      1      0      0      0      0      0      0      0      0
    5          B1    5
    6          J     1      2      1
    7          J1  0.5      1
    8          K     0      1                                  1
    9          K1                  INFLOW HYDROGRAPH
   10          M     1      1    0.5           0.8                           1
   11          P           19    111    123    133    142
   12          T                                               1    0.1
   13          W  1.94  0.625
   14          X     2      2      1
   15          K     1      2                                  1
   16          K1                  ROUTED HYDROGRAPH AT DAM - NO BREACH
   17          Y                          1      1
   18          Y1    1                                   -513.1     -1
   19          Y4 513.1    528    530  536.4
   20          Y5    0     13    140   4141
   21          $S  22.7   73.4   92.4  120.2  176.2
   22          $E 513.1    528    530  532.3  536.4
   23          $$ 513.1
   24          $D 536.4  3.037    1.5    185
   25          K    99
   26          A
```

PREVIEW OF SEQUENCE OF STREAM NETWORK CALCULATIONS
RUNOFF HYDROGRAPH AT 1
ROUTE HYDROGRAPH TO 2
END OF NETWORK

```
**********
FLOOD HYDROGRAPH PACKAGE (HEC-1)
DAM SAFETY VERSION      JULY 1973
  LAST MODIFICATION  26 FEB 79
  MODIFIED FOR HONEYWELL APR 79
**********

**********
THIS PROGRAM IS CURRENTLY BEING MODIFIED
TO RUN ON THE DSS HONEYWELL SYSTEM

PLEASE REPORT ANY UNUSUAL OPERATIONS PROBLEMS
TO MIKE TILLSON (RI, 423) PHONE 7-5664
**********

RUN  DATE 09/07/79
                    HIGHBOTHAM BROOK  NY 703  DEC  103C-4285          OSWEGO RIVER BASIN
                    SCS FLOOD CONTROL STRUCTURE                        MADISON COUNTY
                                                                       PMF - SNYDER UH

                                        JOB SPECIFICATION
          NO      NMIN     MIDAY     IDAY      IHR     IMIN    METRC     IPLT     IPRT    NSTAN
         100         1         0        0        0        0        0        0        0        0
                                     JOPER      NWT    LROPT    TRACE
                                         5        0        0        0

                                  MULTI-PLAN ANALYSES TO BE PERFORMED
                                      NPLAN= 1  NRTIO= 2  LRTIO= 1
                          RTIOS=    0.50    1.00

**********          **********          **********          **********          **********

                                  SUB-AREA RUNOFF COMPUTATION

                                        INFLOW HYDROGRAPH
                              ISTAO    ICOMP    IECON    ITAPE     JPLT     JPRT    INAME  ISTAGE   IAUTO
                                  1        0        0        0        0        0        1        0        0

                                        HYDROGRAPH DATA
                    IHYDG     IUHG    TAREA     SNAP    TRSDA    TRSPC    RATIO   ISNOW    ISAME    LOCAL
                        1        1     0.80       0.     0.80       0.       0.       0        1        0

                                        PRECIP DATA
                              SPFE      PMS       R6      R12      R24      R48      R72      R96
                              0.      19.00   111.00   123.00   133.00   142.00     0.       0.
TRSPC COMPUTED BY THE PROGRAM IS 0.800

                                        LOSS DATA
                    LROPT    STRKR    DLTKR    RTIOL    ERAIN    STRKS    RTIOK    STRTL    CNSTL    ALSMX    RTIMP
                        0       0.       0.     1.00       0.       0.     1.00     1.00     0.10       0.       0.

                                      UNIT HYDROGRAPH DATA
                                    TP=  1.94     CP=0.63     NTA=  0

                                      RECESSION DATA
                                 STRTQ=     2.00     QRCSN=     2.00     RTIOR= 1.00
APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SNYDER CP AND TP ARE TC= 2.51 AND R= 1.38 INTERVALS
```

	24.	14.	12.	9.	6.	4.	3.	2.	1.

END-OF-PERIOD FLOW

MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q	MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q
1.01	1.00	1	0.01	0.	0.01	2.	1.03	3.00	51	0.	0.	0.	11.
1.01	2.00	2	0.01	0.	0.01	2.	1.03	4.00	52	0.	0.	0.	6.
1.01	3.00	3	0.01	0.	0.01	2.	1.03	5.00	53	0.	0.	0.	4.
1.01	4.00	4	0.01	0.	0.01	2.	1.03	6.00	54	0.	0.	0.	3.
1.01	5.00	5	0.01	0.	0.01	2.	1.03	7.00	55	0.	0.	0.	2.
1.01	6.00	6	0.01	0.	0.01	2.	1.03	8.00	56	0.	0.	0.	2.
1.01	7.00	7	0.02	0.	0.02	2.	1.03	9.00	57	0.	0.	0.	2.
1.01	8.00	8	0.02	0.	0.02	2.	1.03	10.00	58	0.	0.	0.	2.
1.01	9.00	9	0.02	0.	0.02	2.	1.03	11.00	59	0.	0.	0.	2.
1.01	10.00	10	0.02	0.	0.02	2.	1.03	12.00	60	0.	0.	0.	2.
1.01	11.00	11	0.02	0.	0.02	2.	1.03	13.00	61	0.	0.	0.	2.
1.01	12.00	12	0.02	0.	0.02	2.	1.03	14.00	62	0.	0.	0.	2.
1.01	13.00	13	0.11	0.	0.11	2.	1.03	15.00	63	0.	0.	0.	2.
1.01	14.00	14	0.14	0.	0.14	2.	1.03	16.00	64	0.	0.	0.	2.
1.01	15.00	15	0.17	0.	0.17	2.	1.03	17.00	65	0.	0.	0.	2.
1.01	16.00	16	0.43	0.02	0.42	3.	1.03	18.00	66	0.	0.	0.	2.
1.01	17.00	17	0.16	0.06	0.10	7.	1.03	19.00	67	0.	0.	0.	2.
1.01	18.00	18	0.13	0.03	0.10	14.	1.03	20.00	68	0.	0.	0.	2.
1.01	19.00	19	0.01	0.	0.01	16.	1.03	21.00	69	0.	0.	0.	2.
1.01	20.00	20	0.01	0.	0.01	12.	1.03	22.00	70	0.	0.	0.	2.
1.01	21.00	21	0.01	0.	0.01	7.	1.03	23.00	71	0.	0.	0.	2.
1.01	22.00	22	0.01	0.	0.01	4.	1.04	0.	72	0.	0.	0.	2.
1.01	23.00	23	0.01	0.	0.01	3.	1.04	1.00	73	0.	0.	0.	2.
1.02	0.	24	0.01	0.	0.01	3.	1.04	2.00	74	0.	0.	0.	2.
1.02	1.00	25	0.10	0.00	0.10	2.	1.04	3.00	75	0.	0.	0.	2.
1.02	2.00	26	0.10	0.00	0.10	2.	1.04	4.00	76	0.	0.	0.	2.
1.02	3.00	27	0.10	0.00	0.10	2.	1.04	5.00	77	0.	0.	0.	2.
1.02	4.00	28	0.10	0.00	0.10	3.	1.04	6.00	78	0.	0.	0.	2.
1.02	5.00	29	0.10	0.00	0.10	3.	1.04	7.00	79	0.	0.	0.	2.
1.02	6.00	30	0.10	0.00	0.10	3.	1.04	8.00	80	0.	0.	0.	2.
1.02	7.00	31	0.30	0.20	0.10	13.	1.04	9.00	81	0.	0.	0.	2.
1.02	8.00	32	0.30	0.20	0.10	41.	1.04	10.00	82	0.	0.	0.	2.
1.02	9.00	33	0.30	0.20	0.10	73.	1.04	11.00	83	0.	0.	0.	2.
1.02	10.00	34	0.30	0.20	0.10	91.	1.04	12.00	84	0.	0.	0.	2.
1.02	11.00	35	0.30	0.20	0.10	100.	1.04	13.00	85	0.	0.	0.	2.
1.02	12.00	36	0.30	0.20	0.10	104.	1.04	14.00	86	0.	0.	0.	2.
1.02	13.00	37	1.69	1.59	0.10	173.	1.04	15.00	87	0.	0.	0.	2.
1.02	14.00	38	2.02	1.92	0.10	387.	1.04	16.00	88	0.	0.	0.	2.
1.02	15.00	39	2.53	2.43	0.10	674.	1.04	17.00	89	0.	0.	0.	2.
1.02	16.00	40	6.41	6.31	0.10	1113.	1.04	18.00	90	0.	0.	0.	2.
1.02	17.00	41	2.36	2.26	0.10	1635.	1.04	19.00	91	0.	0.	0.	2.
1.02	18.00	42	1.86	1.76	0.10	1723.	1.04	20.00	92	0.	0.	0.	2.
1.02	19.00	43	0.15	0.05	0.10	1333.	1.04	21.00	93	0.	0.	0.	2.
1.02	20.00	44	0.15	0.05	0.10	829.	1.04	22.00	94	0.	0.	0.	2.
1.02	21.00	45	0.15	0.05	0.10	434.	1.04	23.00	95	0.	0.	0.	2.
1.02	22.00	46	0.15	0.05	0.10	217.	1.05	0.	96	0.	0.	0.	2.
1.02	23.00	47	0.15	0.05	0.10	115.	1.05	1.00	97	0.	0.	0.	2.
1.03	0.	48	0.15	0.05	0.10	67.	1.05	2.00	98	0.	0.	0.	2.
1.03	1.00	49	0.	0.	0.	38.	1.05	3.00	99	0.	0.	0.	2.
1.03	2.00	50	0.	0.	0.	22.	1.05	4.00	100	0.	0.	0.	2.
									SUM	21.58	17.92	3.67	9412.
										(548.)	(455.)	(93.)	(266.52)

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	1723.	1196.	384.	130.	9411.
CMS	49.	34.	11.	4.	266.
INCHES		13.93	17.84	18.13	18.24
MM		353.80	453.16	460.61	463.27
AC-FT		794.	761.	773.	778.
THOUS CU M		773.	938.	954.	959.

HYDROGRAPH AT STA 1 FOR PLAN 1, RTIO 1

1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	4.	7.	8.	6.
4.	2.	2.	1.	1.	1.	1.	1.	1.	1.
6.	21.	36.	46.	50.	52.	87.	194.	337.	556.
817.	662.	558.	415.	217.	109.	58.	33.	19.	11.
5.	3.	2.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	862.	509.	192.	65.	4706.
CMS	24.	17.	5.	2.	133.
INCHES		6.96	8.92	9.07	9.12
MM		176.96	226.58	230.30	231.63
AC-FT		297.	380.	387.	389.
THOUS CU M		366.	469.	477.	480.

HYDROGRAPH AT STA 1 FOR PLAN 1, RTIO 2

2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	3.	7.	14.	16.	12.
7.	4.	3.	3.	2.	2.	2.	3.	3.	3.
13.	41.	73.	91.	100.	104.	173.	387.	674.	1113.
1635.	1325.	1333.	829.	434.	217.	115.	67.	38.	22.
11.	5.	4.	3.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	1723.	1198.	384.	130.	9411.
CMS	49.	34.	11.	4.	266.
INCHES		13.93	17.84	18.13	18.24
MM		353.80	453.16	460.61	463.27
AC-FT		594.	761.	773.	776.
THOUS CU M		733.	938.	954.	959.

********** ********** ********** ********** **********

HYDROGRAPH ROUTING

ROUTED HYDROGRAPH AT DAM - NO BREACH

ISTAG	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
2	1	0	0	0	0	1	0	0

ROUTING DATA

CLOSS	CLOSS	AVG	IRES	ISAME	IOPT	IPMP	LSTR
0.	0.	.3	1	1	0	0	0

NSTPS	NSTDL	LAG	AMSKK	X	TSK	STORA	ISPRAT
1	0	0	0.	0.	0.	-513.	-1

STAGE	513.10	548.00	530.00	536.40
FLOW	0.	48.00	140.00	4141.00

CAPACITY= 23. 73. 92. 120. 170.

CREL	SPWID	COOW	EXPW	ELEVL	COOL	CAREA	EXPL
513.1	0.	0.	0.	0.	0.	0.	0.

DAM DATA

TOPEL	COQD	EXPD	DAMWID
536.4	3.1	1.5	185.

STATION 2, PLAN 1, RATIO 1

END-OF-PERIOD HYDROGRAPH ORDINATES

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	2.	2.	4.	5.	6.	8.	12.	34.	350.
806.	852.	732.	471.	260.	139.	114.	85.	61.	41.
28.	18.	18.	17.	17.	16.	16.	15.	15.	14.
14.	14.	13.	13.	13.	12.	12.	12.	11.	11.
11.	10.	10.	10.	10.	9.	9.	9.	9.	9.
9.	8.	8.	8.	7.	7.	7.	7.	7.	7.
6.	6.	6.	6.	6.	6.	6.	5.	5.	5.

STORAGE

23.	23.	23.	23.	23.	23.	23.	23.	23.	23.
24.	24.	24.	24.	24.	24.	24.	24.	25.	25.
26.	26.	26.	26.	26.	26.	26.	26.	26.	26.
29.	27.	29.	33.	36.	40.	45.	56.	76.	97.
105.	100.	104.	99.	95.	92.	88.	84.	80.	77.
75.	73.	72.	71.	70.	68.	67.	66.	65.	64.
62.	61.	60.	59.	58.	57.	56.	56.	55.	54.
53.	52.	51.	51.	50.	49.	49.	48.	47.	47.
46.	45.	45.	44.	44.	43.	43.	42.	42.	41.
41.	40.	40.	40.	39.	39.	38.	38.	38.	37.

STAGE

513.1	513.1	513.2	513.2	513.2	513.2	513.3	513.3	513.3	513.3
513.3	513.3	513.4	513.4	513.4	513.4	513.5	513.6	513.8	513.9
514.0	514.0	514.1	514.1	514.1	514.1	514.1	514.1	514.1	514.1
514.1	514.2	515.1	516.0	517.1	518.2	519.7	522.8	528.3	530.3
531.1	531.1	530.9	530.5	530.2	529.9	529.6	529.1	528.7	528.4
528.2	528.0	527.6	527.2	526.9	526.5	526.1	525.8	525.4	525.1
524.8	524.5	524.2	523.9	523.6	523.3	523.0	522.8	522.5	522.3
522.0	521.8	521.6	521.3	521.1	520.9	520.7	520.5	520.3	520.1
520.0	519.8	519.6	519.5	519.3	519.1	519.0	518.8	518.7	518.6
518.4	518.3	518.2	518.0	517.9	517.8	517.7	517.6	517.5	517.4

PEAK OUTFLOW IS 852. AT TIME 42.00 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	852.	561.	173.	63.	4531.
CMS	24.	16.	5.	2.	128.
INCHES		6.53	8.04	8.75	8.78
MM		165.78	204.27	222.29	223.02
AC-FT		278.	343.	373.	374.
THOUS CU M		343.	423.	460.	462.

STATION 2, PLAN 1, RATIO 2

END-OF-PERIOD HYDROGRAPH ORDINATES

OUTFLOW

5.	5.	5.	7.	10.	14.	16.	95.	593.	1003.
1[illegible].	1735.	1460.	944.	519.	256.	138.	118.	91.	65.
19.	19.	18.	18.	17.	17.	16.	14.	10.	19.
15.	14.	14.	14.	13.	13.	13.	12.	12.	12.
12.	11.	11.	11.	10.	10.	10.	10.	10.	9.
9.	9.	9.	8.	8.	8.	8.	8.	8.	7.
7.	7.	7.	7.	7.	7.	6.	6.	6.	6.

STORAGE

23.	25.	23.	23.	23.	24.	24.	24.	24.	24.
24.	24.	24.	25.	25.	25.	25.	26.	27.	28.
27.	29.	29.	29.	29.	29.	29.	29.	29.	27.
30.	32.	36.	42.	51.	57.	67.	86.	101.	109.
114.	124.	117.	108.	100.	95.	92.	89.	85.	81.
7[illegible].	75.	7[illegible].	72.	71.	70.	69.	68.	66.	65.
59.	59.	57.	61.	60.	59.	58.	58.	57.	56.
55.	54.	54.	53.	52.	51.	51.	50.	50.	49.
49.	48.	47.	47.	46.	46.	45.	45.	44.	44.
43.	43.	42.	42.	42.	41.	41.	40.	40.	40.

STAGE

513.1	513.[illegible]	513.2	513.3	513.3	513.4	513.4	513.4	513.5	513.5
513.[illegible]	513.[illegible]	513.[illegible]	513.7	513.7	513.7	513.8	514.1	514.4	514.7
514.[illegible]	515.[illegible]	515.[illegible]	515.0	515.0	515.0	515.0	515.0	515.0	515.0
515.2	515.[illegible]	517.[illegible]	519.9	521.0	523.2	526.2	529.3	530.7	531.4
532.2	532.[illegible]	532.1	531.3	530.6	530.2	530.0	529.6	529.2	528.8
528.4	528.[illegible]	528.[illegible]	527.7	527.3	527.0	526.6	526.3	525.9	525.6
525.[illegible]	525.[illegible]	524.7	524.4	524.1	523.9	523.6	523.3	523.1	522.9
522.[illegible]	522.[illegible]	522.2	522.0	521.8	521.5	521.4	521.2	521.0	520.8
520.[illegible]	520.[illegible]	520.3	520.1	520.0	519.8	519.7	519.5	519.4	519.3
519.1	519.[illegible]	519.[illegible]	518.8	518.6	518.5	518.4	518.3	518.2	518.1

PEAK OUTFLOW IS 1735. AT TIME 42.00 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	1735.	1201.	365.	127.	9207.
CMS	49.	34.	10.	4.	261.
INCHES		13.96	16.96	17.79	17.64
MM		354.66	430.72	451.74	453.20
AC-FT		595.	723.	758.	761.
THOUS CU M		734.	892.	936..	939.

********** ********** ********** ********** **********

PEAK FLOW AND STORAGE (END OF PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND (CUBIC METERS PER SECOND)
AREA IN SQUARE MILES (SQUARE KILOMETERS)

OPERATION	STATION	AREA	PLAN	RATIOS APPLIED TO FLOWS RATIO 1 0.50	RATIO 2 1.00
HYDROGRAPH AT	1	0.80	1	862.	1723.
	(	0.00)	(	24.40)(	48.80)(
ROUTED TO	2	0.80	1	852.	1735.
	(	0.00)	(	24.12)(	49.12)(

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	513.10	513.10	536.40
STORAGE	23.	23.	176.
OUTFLOW	0.	0.	4141.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
0.50	531.14	0.	106.	852.	0.	42.00	0.
1.00	532.55	0.	124.	1735.	0.	42.00	0.

LIST OF REFERENCES

APPENDIX E

APPENDIX E

REFERENCES

1) U.S. Department of Commerce, Technical Paper No. 40, Rainfall Frequency Atlas of the United States, May 1961.

2) Soil Conservation Service, National Engineering Handbook, Section 4, Hydrology, August 1972 (U.S. Department of Agriculture).

3) H.W. King and E.F. Brater, Handbook of Hydraulics, 5th edition, McGraw-Hill, 1963.

4) T.W. Lambe and R.V. Whitman, Soil Mechanics, John Wiley and Sons, 1965.

5) W.D. Thornbury, Principles of Geomorphology, John Wiley and Sons, 1969.

6) University of the State of New York, Geology of New York, Education Leaflet 20, Reprinted 1973.

7) Cornell University Agriculture Experiment Station (compiled by M.G. Cline and R.L. Marshall), General Soil Map of New York State and Soils of New York Landscapes, Information Bulletin 119, 1977.

APPENDIX F

STABILITY ANALYSES

Design Folder

UNITED STATES DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

Midwest TSC, Soil Mechanics Lab, 800 "J" Street, Lincoln, NE 68508

SUBJ: ENGINEERING - New York, WF-08, Higinbotham Brook DATE: October 4, 1978

TO: Lloyd E. Thomas
State Conservation Engineer
U.S. Courthouse & Federal Building
100 S. Clinton Street, Room 771
SCS, Syracuse, New York 13260

ATTACHMENTS

1. Form SCS-ENG-354, Soil Mechanics Laboratory Data, 2 sheets
2. Figure 1, Plot of Percent Sodium Versus Total Dissolved Salts, 1 sheet
3. Figure 2, Summary of Pinhole Study, 1 sheet

INTRODUCTION

The index tests and the dispersion tests requested on the 12 samples from the above site have been completed and the results are summarized on the attached data sheet.

DISCUSSION

The laboratory dispersion test (double hydrometer method) and the pinhole test indicate the materials generally have a dispersive clay fraction; however, the "crumb" test and the chemical test generally show the materials to have low dispersion. See the attached Plot of Total Dissolved Salts Versus Percent Sodium, and the test results on the Summary Sheet.

Additional pinhole tests were made on six selected samples. The pinhole tests were made using a 0.01 Normal solution of calcium chloride ($CaCl_2$) instead of distilled water for the eroding fluid (as in the regular pinhole test) to determine if the material smaller than the 5-micron size (.005 mm) is really dispersive clay or just finely ground rock flour that can be physically eroded like a very fine sand or silt, when water runs over it. Earlier pinhole tests in the laboratory have shown that using flowing water with conductivity greater than that of the pore water fluid in the soil caused no appreciable enlargement of the pinhole in dispersive clay soils; whereas, distilled water erodes the pinhole greatly.

Pinhole tests were also made on the six samples in which the soil was cured in a compacted state for 3 to 5 days to determine if compacting the materials prior to testing would affect the test results.

The results of the additional tests are summarized in the attached figure 2. The tests generally show that the six samples were only slightly less erosive using the calcium chloride solution, so it appears the samples do not contain much highly dispersive clay. Highly dispersive clays would not have eroded significantly using the salt solution.

The pinholes appeared to erode from the exit back through the sample in the classical manner of "piping" as described in most soil mechanics textbooks, rather than failing along the entire length of the hole as in the dispersive clay type of piping.

CONCLUSIONS

The low plasticity materials are highly susceptible to erosion by flowing water. The clay fraction seems to perform like a very fine single-grain material rather than a dispersive clay.

Prepared by:

Edgar F. Steele
Civil Engineer

Reviewed and Approved by:

Lorn P. Dunnigan, Head
Soil Mechanics Laboratory

Attachments

cc:
Lloyd E. Thomas, State Conservation Engineer, SCS, Syracuse, NY (3 copies)
Edgar L. Helmey, Head, Engineering Staff, NETSC, SCS, Broomall, PA
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USDA:SCS:ESteele:R&CC

SCS-ENG-354
REV. 3-70
FILE CODE ENG-13-18

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

8/14/78 NEW YORK

Higinbotham Brook

LABORATORY SAMPLE NUMBER	FIELD NUMBER	LOCATION AND DESCRIPTION	DEPTH	FIELD CLASSIFICATION	MECHANICAL ANALYSIS GRAIN SIZE DISTRIBUTION EXPRESSED AS PERCENT FINER BY DRY WEIGHT															ATTERBERG LIMITS		UNIFIED CLASSIFICATION
					FINES					SAND						GRAVEL						
					0.002	0.005	0.02	0.05	#200 0.074	#140 0.105	#60 0.250	#40 0.42	#20 0.84	#10 2.0	#4 4.76	3/8" 9.525	1/2" 12.7	3/4" 19.05	1" 25.4	1 1/2" 38.1	3" 76.2	LL	PI	
78W																							
1396	D-1	Dam No. 1 U.S. Slope M. Bag 45' Eleva. 526.6 Sta. 2+50			17	23	32	46	53	60	73	76	81	83	89	94	97	99	99	100		21	6	CL-ML
1397	D-2	Dam No. 1 U.S. Slope M. Bag 65' Eleva. 521.1 Sta. 1+50			22	28	39	52	57	62	77	82	86	90	93	95	97	98	100			24	8	CL
1398	D-3	Dam No. 1 D.S. Slope M. Bag 103' Elev. 505.1 Sta. 1+75			16	24	34	52	61	67	77	83	86	89	92	95	96	98	99	100		21	6	CL-ML
1399	D-4	Dam No. 1 D.S. Slope M. Bag 69' Elev. 513.5 (Berm) Sta. 2+25			21	31	43	54	61	66	77	82	87	89	92	95	97	99	100			26	10	CL
1400	D-5	Dam No. 2, Top Dam M. Bag Elev. 536.4 Sta. 4+95			17	23	35	52	59	74	86	89	92	94	96	98	99	100				19	5	CL-ML
1401	D-6	Dam No. 2 U.S. Slope M. Bag Sta. 5+25			17	21	31	50	67	73	86	88	91	93	95	97	98	99	100			18	5	CL-ML

DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL MECHANICS LABORATORY DATA
Page 1 of 2

MECHANICAL ANALYSIS EXPRESSED AS PERCENT FINER BY DRY WEIGHT									ATTERBERG LIMITS		UNIFIED CLASSIFICATION	SOLUBLE SALTS %	DISPERSION %	MOISTURE - DENSITY RELATIONSHIPS ☐ STANDARD ☐ MODIFIED			UNDISTURBED SAMPLE DATA		FIELD MOISTURE %	SPECIAL TESTS				
SAND				GRAVEL										CURVE NO.	MAX. γ_d pcf	OPT. MOIST. %	γ_d g/cc	MOIST. %		Na %	pH	RESISTIVITY OHMS-CM	LIQUID TEST	PLAST. INDEX
#10 2.42	#20 0.84	#40 .42	#4 4.76	3/8" 9.525	1/2" 12.7	3/4" 19.05	1" 25.4	1 1/2" 38.1	3" 76.2 mm	LL	PI														
76	81	83	87	94	97	99	99	100		21	6	CL-ML		39						8.23	3.52	7.1	2465	1	NP
82	86	90	93	95	96	98	100			24	8	CL		45						5.25	3.24	7.2	4215	1	ND
83	86	89	92	95	96	98	99	100		21	6	CL-ML		52						8.78	2.51	7.1	3220	1	D2
82	87	89	92	95	97	99	100			26	10	CL		44						7.70	2.60	7.2	3315	2	ND
59	92	94	96	98	99	100				19	5	CL-ML		67						6.97	2.87	7.3	3790	2	D1
88	91	93	95	97	98	99	100			18	5	CL-ML		61						9.21	2.17	7.4	3315	1	D2

2

SCS-ENG-354
Rev. 3-70
FILE Code ENG-13-18

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

NEW YORK

LABORATORY SAMPLE NUMBER	FIELD NUMBER	LOCATION AND DESCRIPTION	DEPTH	FIELD CLASSIFICATION	MECHANICAL ANALYSIS GRAIN SIZE DISTRIBUTION EXPRESSED AS PERCENT FINER BY DRY WEIGHT																ATTERBERG LIMITS		UNIFIED CLASSIFICATION
					FINES					SAND						GRAVEL							
					0.002 mm	0.005 mm	0.02 mm	0.05 mm	#200 0.074 mm	#40 0.35 mm	#60 0.250 mm	#80 0.42 mm	#20 0.84 mm	#10 2.0 mm	#4 4.76 mm	5/16" 9.525 mm	1/2" 12.7 mm	3/4" 19.05 mm	1" 25.4 mm	1 1/2" 38.1 mm	3" 76.2 mm	L.L.	P.I.	
78W		Higinbotham Brook																					
1402	D-7	Dam No. 2 D.S. Slope M. Bag			15	21	33	55	68	73	35	89	90	93	95	97	99	99	100			19	5	CL-ML
	12'	Elev. 533.5																						
		Sta. 5+30																						
1403	D-8	Dam No. 3 6' Left M. Bag			17	25	38	57	74	73	84	86	90	92	94	97	98	100				23	7	CL
		Sta. 2+68, Elev. 536.4																						
1404	D-9	Dam No. 3 D.S. Slope M. Bag			16	21	35	53	67	71	83	85	88	89	91	93	94	95	99	100		21	6	CL-ML
		39' Left of Sta. 2+68																						
		~~Elev. 522.4~~																						
1405	D-10	Dam No. 3 U.S. Slope M. Bag			16	21	32	54	63	67	77	80	84	87	90	93	96	97	99	100		21	6	CL-ML
		24' Right of Sta. 2+13																						
		~~Elev. 531.2~~																						
1406	D-11	Diversion Right Slope M. Bag			15	21	42	64	79	81	89	91	94	97	98	99	100					19	4	ML-CL
		Sta. 3+50 75' Right																						
		Elev. 528.8																						
		Sta. 5+50 60' Right																						

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

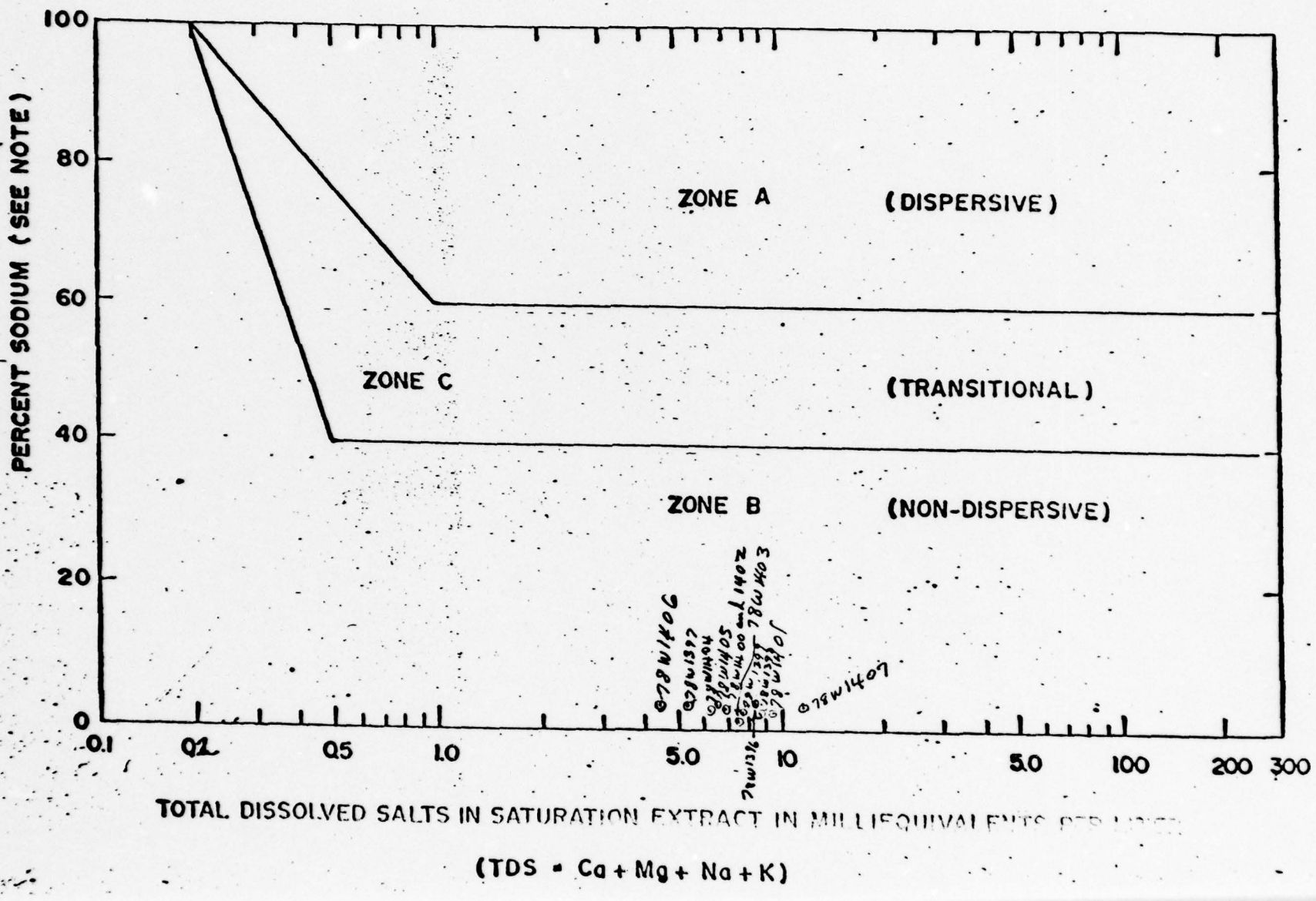
SOIL MECHANICS LABORATORY DATA 2

MECHANICAL ANALYSIS DISTRIBUTION EXPRESSED AS PERCENT FINER BY DRY WEIGHT												ATTERBERG LIMITS		UNIFIED CLASSIFICATION	SOLUBLE SALTS %	DISPERSION % MOIST SOIL	MOISTURE - DENSITY RELATIONSHIPS ☐ STANDARD ☐ MODIFIED			UNDISTURBED SAMPLE DATA		SPECIAL TESTS					
SAND						GRAVEL																					
#40 0.25	#60 0.250	#80 0.42	#20 0.84	#10 2.0	#4 4.76	3/8" 9.525	1/2" 12.7	3/4" 19.05	1" 25.4	1 1/2" 38.1	3" 76.2	LL	PI				CURVE NO	MAX γ_d pcf	% %	γ_d g/cc	% %	TOTAL SOL SALT MEQ/LITRE	Na %	pH	RESISTIVITY OHMS-CM	LABORATORY RESISTIVITY TEST	PINHOLE
73	35	32	20	93	95	97	99	99	100			19	5	CL-ML		70						6.99	2.29	7.3	4260	1	D2
23	84	76	70	92	94	97	98	100				23	7	CL or CL-ML		61						7.45	1.74	7.2	3410	2	D2
71	33	85	88	89	91	93	94	95	99	100		21	6	CL-ML		71						6.27	2.23	7.2	4170	2	D2
67	77	80	84	87	90	93	95	95	95	100		21	6	CL-ML		71						6.45	2.29	7.2	3840	3	ND2
81	89	91	94	97	98	99	100					19	4	ML or CL-ML		55						4.42	3.17	7.4	5570	1	D2

2

FIGURE I

NOTE: PERCENT SODIUM (MEQ./LITER) = $\frac{Na\,(100)}{Ca+Mg+Na+K}$



New York
E.F.S.
9/25/78
Pinhole Evaluation Study
Higinbotham Brook

Pinhole Test Results

Sample Number 78W	Tested with distilled water — Curing Time	Pinhole Sketch	Curing Time	Pinhole Sketch	Tested with 0.01N CaCl2 Solution — Curing Time	Pinhole Sketch	Curing Time	Pinhole Sketch
	1 hour		5 days		1 hr		3 days	
1397	ND3	3mm, 5mm	ND3	2mm, 2½mm, 5mm	ND2	2mm, 3mm	ND1	1mm, 1mm
1398	D2	3mm, 5mm	D2	3mm, 2mm, 5mm	ND3	4mm, 3mm	ND3	1½mm, 3½mm
1401	D2	3mm, 5mm, 3mm, 5mm, 4mm	ND3	3mm, 5mm	ND3	2mm, 4mm, 2½mm	ND3	2mm, 5½mm
1402	D1	3mm	D1	3mm, 12mm	D2? or ND3	4mm, Plugged	D2? or ND3	5mm, Plugged @ 2-inches
1403	D1	4mm, 3mm	ND3	2½mm, 6mm	ND3	1½mm, 2mm	ND3	1½mm, 3mm
1404	D1	4mm, 6mm	D2	2mm, 2½mm, 12mm	ND3?	3mm, Plugged	ND3	4mm, Plugged

FIGURE 2

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE - Soil Mechanics Laboratory
800 "J" Street, Lincoln, Nebraska 68508

SUBJECT: ENG 13-18, New York WF-08, Higinbotham Brook (Madison County) **DATE:** May 28, 1975

TO: Donald W. Shanklin
State Conservation Engineer
Soil Conservation Service
Syracuse, New York

ATTACHMENTS

1. Form SCS-ENG-354, Soil Mechanics Laboratory Data, 1 sheet.
2. Form SCS-ENG-355A & B, Triaxial Shear Test Data, 3 tests, 6 sheets.
3. Form SCS-352, Compaction and Penetration Resistance, 3 sheets.

DISCUSSION

The soil mechanics tests requested on the three borrow samples from the above site have been completed and the results of the tests are attached.

The minus No. 4 fractions of Samples B-126 (75W1209) and G-608 (75W1210) are fairly dilatant materials. The shear test specimens had to be molded at optimum moisture content to hold the prestress from the compacting effort.

The shear test results are tabulated below.

Sample No.		Unified Class	Atterberg Limits		Shear Parameters			
					Total Stress		Effective Stress	
Field	Lab.		LL	PI	$\phi°$	c, psf	$\bar{\phi}°$	$\bar{c}$, psf
A-204	75W1208	CL	34	12	14.5	500	35	0
B-126	1209	GC	29	9	14.5	650	27	325
G-608	1210	CL	25	9	12	300	24.5	125

Prepared by:

Edgar F. Steele
Civil Engineer

Reviewed & Approved by:

Lorn P. Dunnigan
Head, Soil Mechanics Laboratory

Attachments

cc:
Donald W. Shanklin (2)
Bernard S. Ellis, Syracuse
Donald E. Wallin, Syracuse
Arthur B. Holland, Upper Darby, PA

SCS-ENG-355A (Rev. 3-70)
FILE CODE ENG-22

LABORATORY NO 25[illegible]

MATERIALS TESTING REPORT	U. S. DEPARTMENT of AGRICULTURE SOIL CONSERVATION SERVICE	TRIAXIAL SHEAR TEST

PROJECT and STATE: HIGINBOTHAM BROOK NEW YORK
SAMPLE LOCATION: EMIER. SPWY.
FIELD SAMPLE NO.: A-204.1
DEPTH: 1-2'
GEOLOGIC ORIGIN:
TYPE OF SAMPLE: COMPACTED
TESTED AT: SML-LINCOLN
APPROVED BY:
DATE:

INDEX TEST DATA

USCS _____; LL 34; PI 12
% FINER (mm): 0.002 23; 0.005 34;
0.074 (#200) 62
G_s (-#4) 2.69; G_s (+#4) _____
STANDARD: γ_d MAX. 105.0 pcf; w_o 19.5%
MODIFIED: γ_d MAX. _____ pcf; w_o _____%

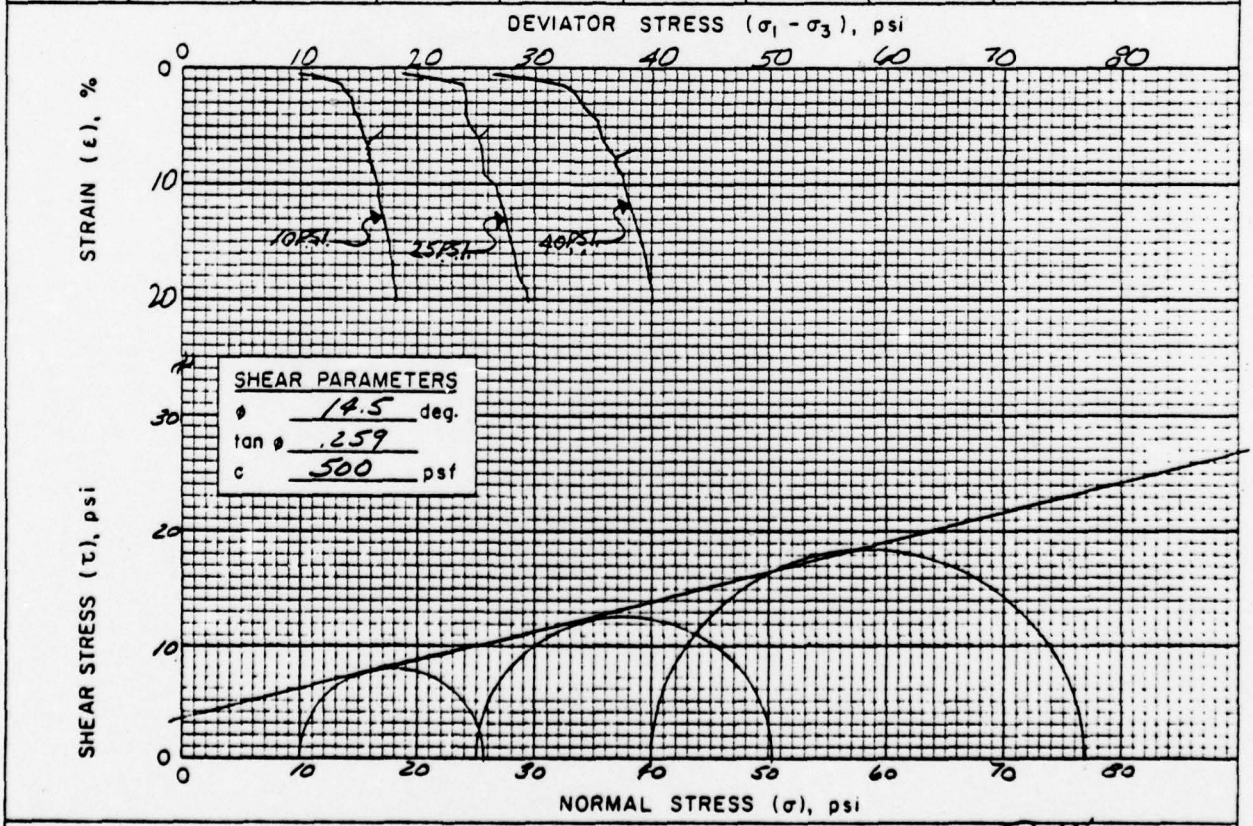
SPECIMEN DATA

HEIGHT 3.0"; DIAMETER 1.4"
MATERIALS TESTED PASSED #10 SIEVE
METHOD OF PREPARATION STATIC COMPACTED IN 2 LIFTS
MOLDING MOISTURE 22.3 %
MOLDED AT 96.0% OF γ_d MAXIMUM

TYPE OF TEST

- UU ☐
- CU ☐
- $\overline{CU}$ ☑
- CD ☐

DRY DENSITY		B	MOISTURE CONTENT, %			TIME OF CONSOLI-DATION (hrs.)	MINOR PRINCIPAL STRESS σ_3 (psi)	DEVIATOR STRESS $\sigma_1 - \sigma_3$ (psi)	AXIAL STRAIN AT FAILURE, ε (%)
INITIAL pcf ☒ g/cc ☐	CONSOLI-DATED pcf ☐ g/cc ☐	Parameter	START OF TEST	DEG. OF SAT. AT START OF TEST	END OF TEST				
100.8		0.98	w_i = 24.8		24.2	16:83	10	15.7	6.5
100.8		0.95			23.0	16:17	25	25.2	6.1
100.7		0.97			22.4	16:95	40	36.8	7.6



REMARKS BACK-PRESSURED

GTH/EDS

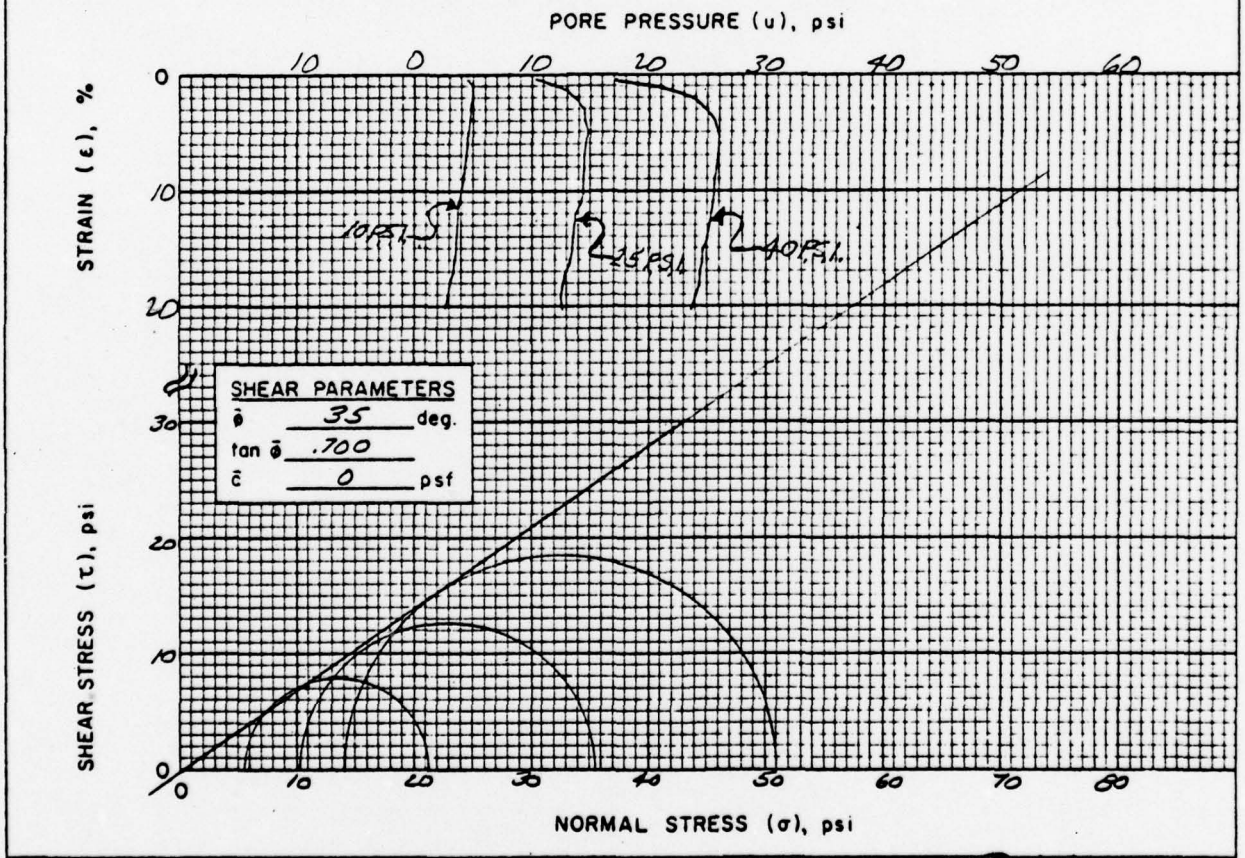
SCS-ENG-355B (6-71)
FILE CODE ENG-72

LABORATORY NO 25411208

MATERIALS TESTING REPORT	U. S. DEPARTMENT of AGRICULTURE SOIL CONSERVATION SERVICE	TRIAXIAL SHEAR TEST with pore pressure measured

PROJECT and STATE: HIGINSVILLE Brick NEW YORK
SAMPLE LOCATION: EMER. SPUR Y.
TYPE OF SAMPLE: COMPACTED
TESTED AT: SML - LINCOLN
APPROVED BY:
DATE:

MINOR PRINCIPAL STRESS, σ_3 (psi)	PORE PRESSURE, u (psi)	EFFECTIVE MINOR PRINCIPAL STRESS, $\bar{\sigma}_3$ (psi)	DEVIATOR STRESS, $\sigma_1 - \sigma_3$ (psi)	FAILURE CRITERIA	AXIAL STRAIN AT FAILURE, ε (%)
10	4.4	5.6	15.7		6.5
25	14.7	10.3	25.2		6.1
40	25.9	14.1	36.8		7.6



REMARKS BACK-PRESSURED

SCS-ENG-355A (Rev. 3-70)
FILE CODE ENG-22

LABORATORY NO 75W120

MATERIALS TESTING REPORT	U. S. DEPARTMENT of AGRICULTURE SOIL CONSERVATION SERVICE	TRIAXIAL SHEAR TEST

PROJECT and STATE			SAMPLE LOCATION
HIGINBOTHAM BROOK NEW YORK			BORROW
FIELD SAMPLE NO. B-126.1	DEPTH 1.0-11.0 '	GEOLOGIC ORIGIN	
TYPE OF SAMPLE COMPACTED	TESTED AT SML LINCOLN	APPROVED BY	DATE

INDEX TEST DATA

USCS _____ ; LL 29 ; PI 9
% FINER (mm): 0.002 11 ; 0.005 17 ;
0.074 (#200) 28
G_s (-#4) 2.78 ; G_s (+#4) _____
STANDARD: γ_d MAX. 121.5 pcf; w_o 13.5 %
MODIFIED: γ_d MAX. _____ pcf; w_o _____ %

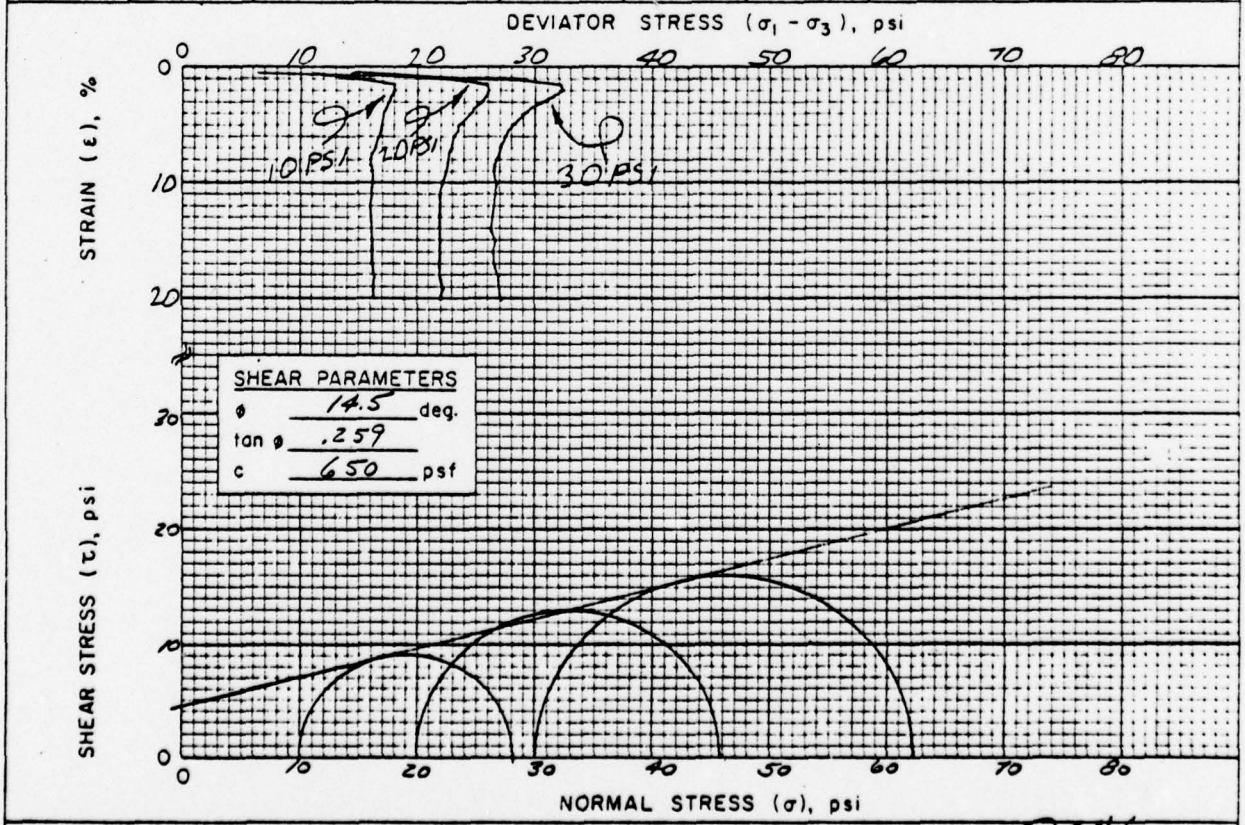
SPECIMEN DATA

HEIGHT 3.0 "; DIAMETER 1.4 "
MATERIALS TESTED PASSED #4 SIEVE
METHOD OF PREPARATION STATIC
2 LAYER COMPACTION
MOLDING MOISTURE 13.5 %
MOLDED AT 94.7 % OF γ_d MAXIMUM

TYPE OF TEST

UU ☐
CU ☐
$\overline{CU}$ ☒
CD ☐

DRY DENSITY		B, Parameter	MOISTURE CONTENT, %			TIME OF CONSOLIDATION (hrs.)	MINOR PRINCIPAL STRESS σ_3 (psi)	DEVIATOR STRESS $\sigma_1 - \sigma_3$ (psi)	AXIAL STRAIN AT FAILURE, ε (%)
INITIAL pcf ☒ g/cc ☐	CONSOLIDATED pcf ☐ g/cc ☐		START OF TEST	DEG. OF SAT. AT START OF TEST	END OF TEST				
115.1		0.95			17.6	16.08	10	18.0	1.5
115.2		0.97			17.0	17.00	20	25.8	1.5
115.1		0.96			16.7	16.78	30	32.1	1.5



REMARKS BACK-PRESSURED

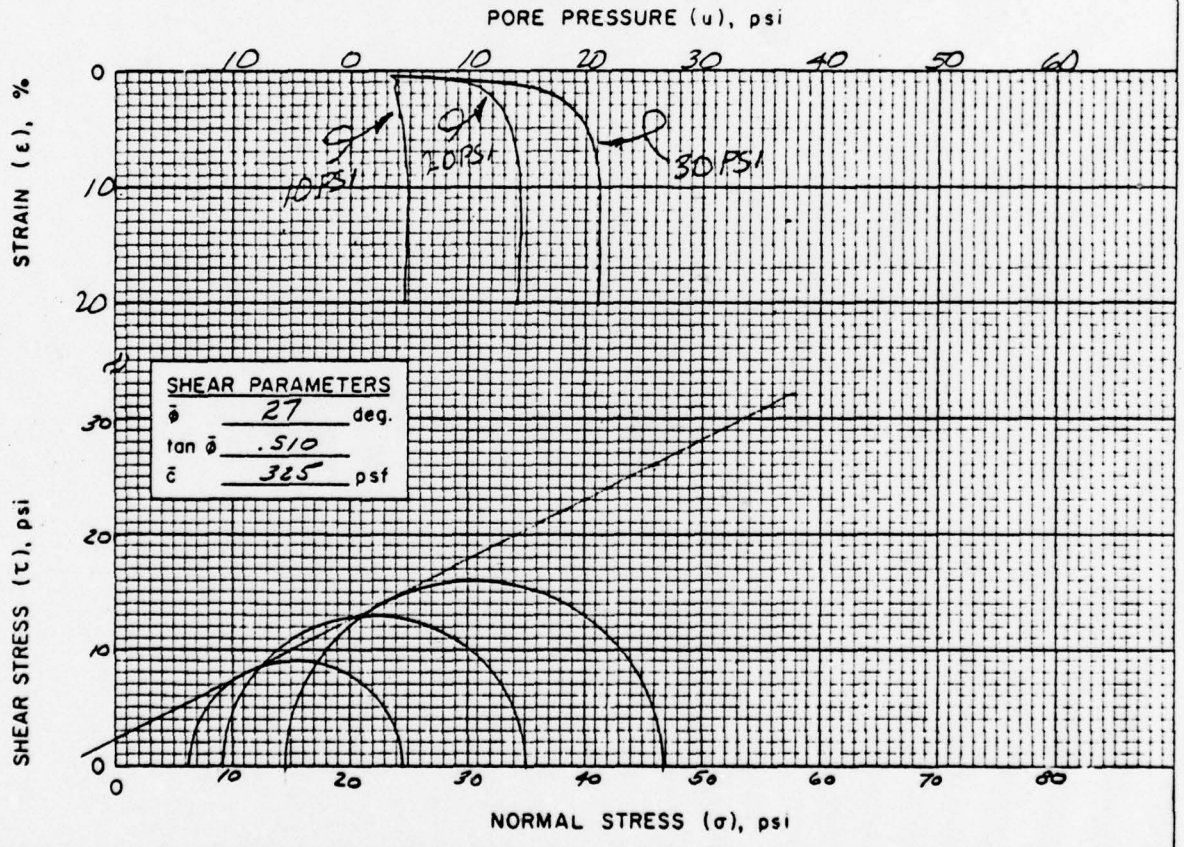
SCS-ENG-355B(6-71)
FILE CODE ENG-72

LABORATORY NO 75W1200

MATERIALS TESTING REPORT	U. S. DEPARTMENT of AGRICULTURE SOIL CONSERVATION SERVICE	TRIAXIAL SHEAR TEST with pore pressure measured

PROJECT and STATE: HIGINBOTHAM BROOK NEW YORK
SAMPLE LOCATION: BORROW
TYPE OF SAMPLE: COMPACTED
TESTED AT: SML LINCOLN
APPROVED BY:
DATE:

MINOR PRINCIPAL STRESS, σ_3 (psi)	PORE PRESSURE, u (psi)	EFFECTIVE MINOR PRINCIPAL STRESS, $\bar{\sigma}_3$ (psi)	DEVIATOR STRESS, $\sigma_1 - \sigma_3$ (psi)	FAILURE CRITERIA	AXIAL STRAIN AT FAILURE, ε (%)
10	3.7	6.3	18.0		1.5
20	10.8	9.2	25.8		1.5
30	15.4	14.6	32.1		1.5



REMARKS BACK-PRESSURED

RH 9/28

SCS-ENG-355A (Rev. 3-70)
FILE CODE ENG-22

LABORATORY NO 25.11219

MATERIALS TESTING REPORT	U. S. DEPARTMENT of AGRICULTURE SOIL CONSERVATION SERVICE	TRIAXIAL SHEAR TEST

PROJECT and STATE: HIGINBOTHAM BROOK, NEW YORK
SAMPLE LOCATION: DIVERSION
FIELD SAMPLE NO: G-608.1
DEPTH: 1-9'
GEOLOGIC ORIGIN:
TYPE OF SAMPLE: COMPACTED
TESTED AT: SCS-LINCOLN
APPROVED BY:
DATE:

INDEX TEST DATA

USCS _____; LL 25; PI 9
% FINER (mm): 0.002 24; 0.005 33;
0.074 (#200) 78
G_s (-#4) 2.74; G_s (+#4) _____
STANDARD: γ_d MAX. 117.5 pcf; w_o 14.0%
MODIFIED: γ_d MAX. _____ pcf; w_o _____%

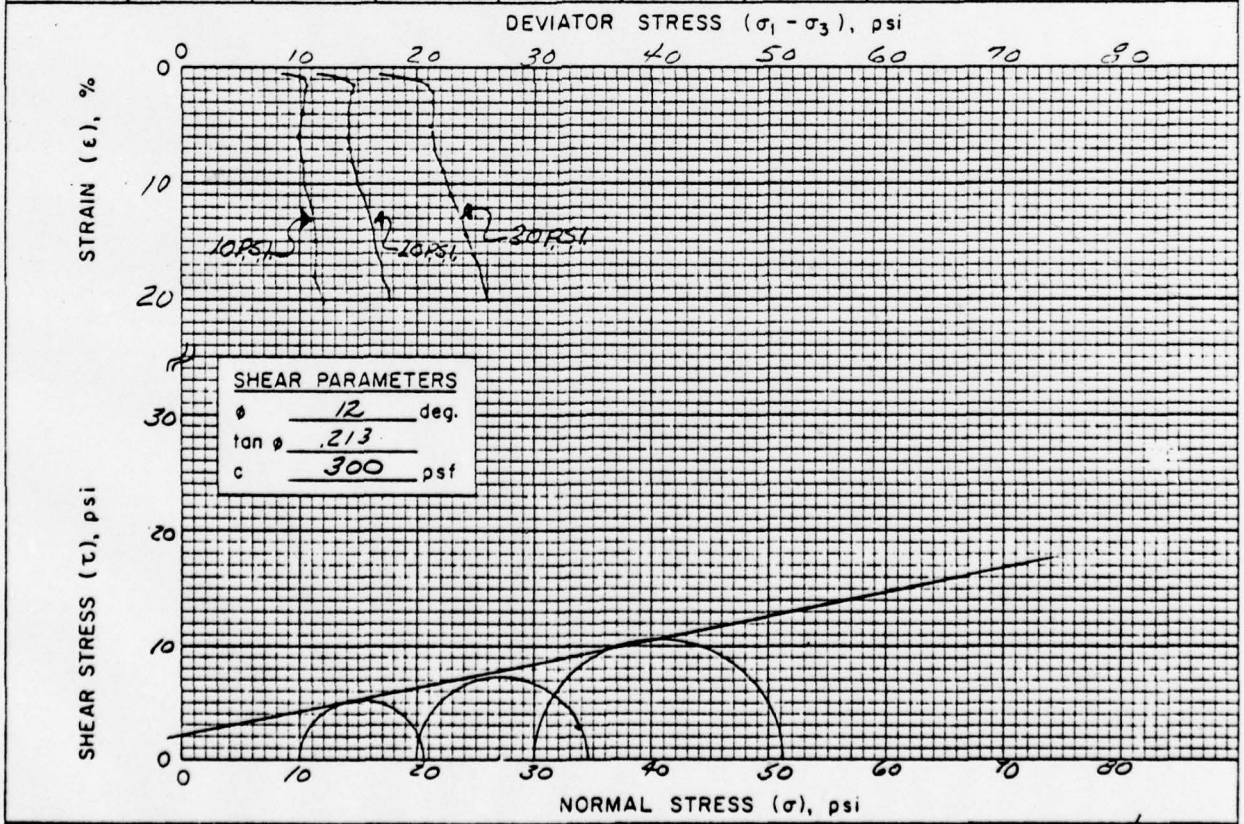
SPECIMEN DATA

HEIGHT 3.0"; DIAMETER 1.4"
MATERIALS TESTED PASSED #4 SIEVE
METHOD OF PREPARATION STATIC COMPACTED IN 2 LIFTS
MOLDING MOISTURE 13.4 %
MOLDED AT 94.9% OF γ_d MAXIMUM

TYPE OF TEST

UU ☐
CU ☐
$\bar{C}U$ ☑
CD ☐

DRY DENSITY		B PARAMETER	MOISTURE CONTENT, %			TIME OF CONSOLIDATION (hrs.)	MINOR PRINCIPAL STRESS σ_3 (psi)	DEVIATOR STRESS $\sigma_1 - \sigma_3$ (psi)	AXIAL STRAIN AT FAILURE, ε (%)
INITIAL pcf ☐ g/cc ☐	CONSOLIDATED pcf ☐ g/cc ☐		START OF TEST	DEG. OF SAT. AT START OF TEST	END OF TEST				
111.5		0.95			18.7	16:00	10	10.5	1.5
111.4		0.95			17.9	16:18	20	14.4	1.5
111.6		0.96			17.0	16:25	30	21.2	2.0



REMARKS BACK-PRESSURED

GRH 7/28

SCS-ENG-355B (6-71)
FILE CODE ENG - 72

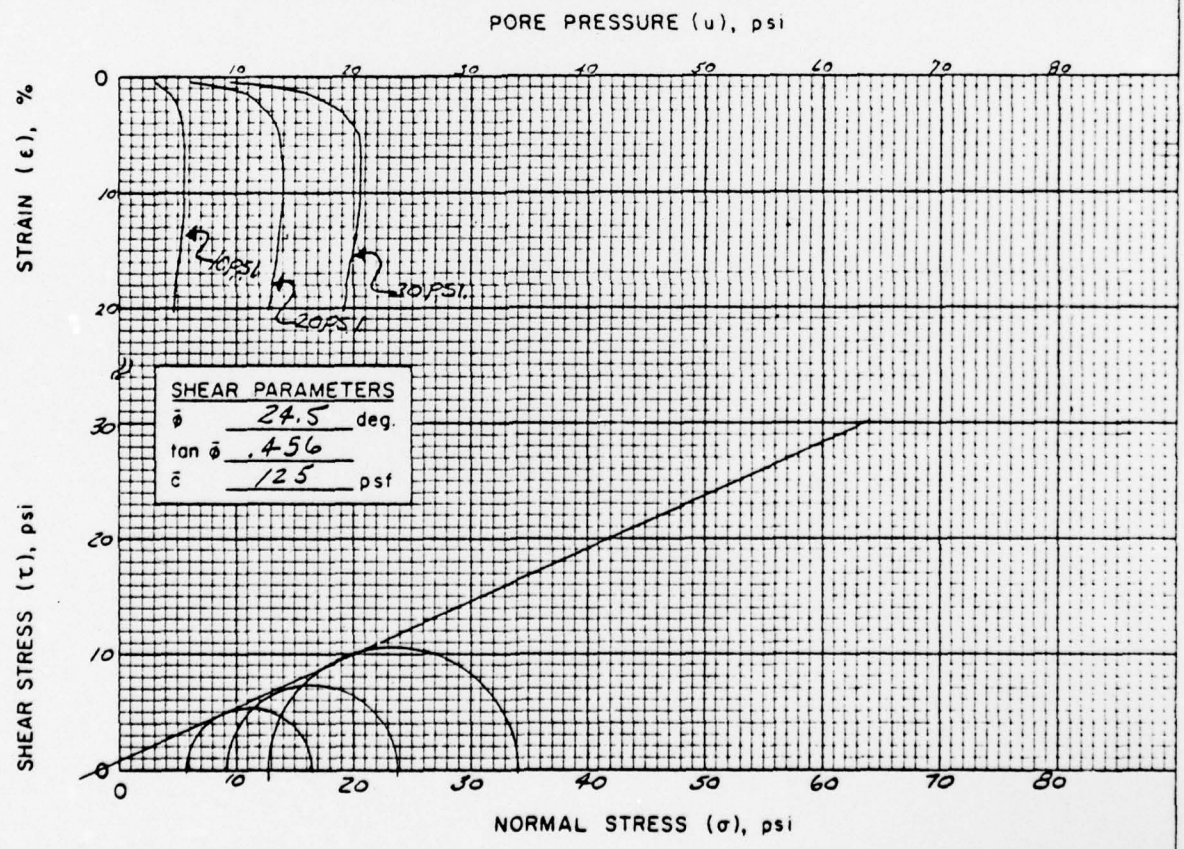
LABORATORY NO 25[illegible]

MATERIALS TESTING REPORT	U. S. DEPARTMENT of AGRICULTURE SOIL CONSERVATION SERVICE	TRIAXIAL SHEAR TEST with pore pressure measured

PROJECT and STATE: HIGHBRIDGE BROOK, NEW YORK — SAMPLE LOCATION: DIVERSION

TYPE OF SAMPLE: CONSOLIDATED — TESTED AT: SMC-LINCOLN — APPROVED BY — DATE

MINOR PRINCIPAL STRESS, σ_3 (psi)	PORE PRESSURE, u (psi)	EFFECTIVE MINOR PRINCIPAL STRESS, $\bar{\sigma}_3$ (psi)	DEVIATOR STRESS, $\sigma_1 - \sigma_3$ (psi)	FAILURE CRITERIA	AXIAL STRAIN AT FAILURE, ε (%)
10	4.2	5.8	10.5		1.5
20	10.7	9.3	14.4		1.5
30	17.2	12.8	21.2		2.0



REMARKS BACK-PRESSURED

RHH 2/08

Form SCS 352
Rev. 5-65

LABORATORY NO. 75W1208

MATERIALS TESTING REPORT	U. S. DEPARTMENT of AGRICULTURE SOIL CONSERVATION SERVICE	COMPACTION AND PENETRATION RESISTANCE

PROJECT and STATE: Higinbotham Brook, New York

FIELD SAMPLE NO	LOCATION	DEPTH
A-204.1	Emer. Spillway.	1-2'

GEOLOGIC ORIGIN	TESTED AT	APPROVED BY	DATE
	SML-LINCOLN		5/29/75

CLASSIFICATION CL LL 34 PI 12 CURVE NO. 1 OF 3

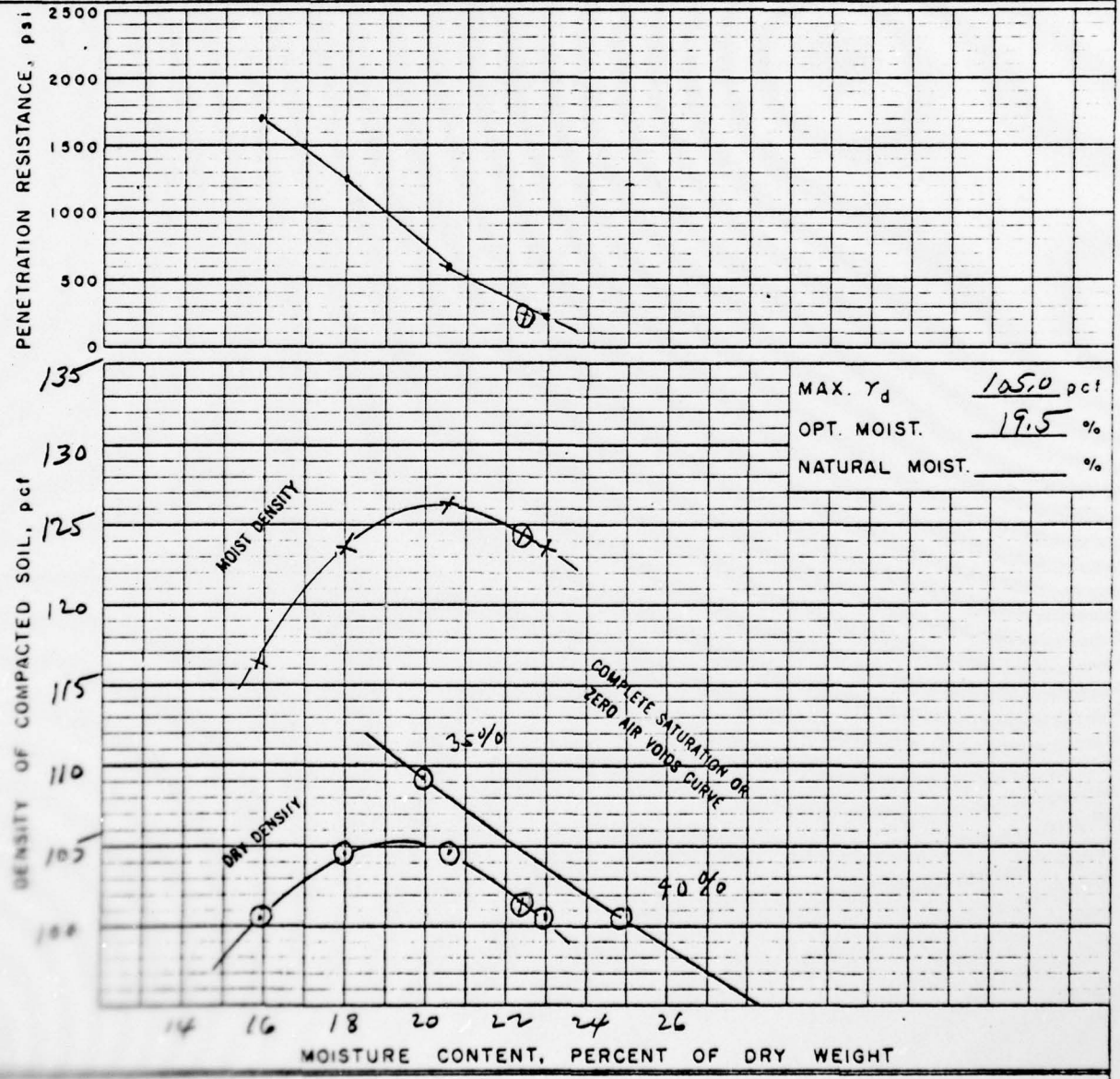
MAX. PARTICLE SIZE INCLUDED IN TEST < #4 "

SPECIFIC GRAVITY (G_s) { MINUS NO. 4 2.69 ; PLUS NO. 4 ____

STD. (ASTM D-698) ☒; METHOD A

MOD. (ASTM D-1557) ☐; METHOD ____

OTHER TEST ☐ (SEE REMARKS)



MAX. γ_d 105.0 pcf

OPT. MOIST. 19.5 %

NATURAL MOIST. ____ %

○ = @ 7% w as received.

CURVE IS FOR THE MINUS NO. 4 FRACTION

GRADATION OF TOTAL SAMPLE

< NO. 200 60 %; < NO. 4 85 %; < 3 IN. 100 %

Form SCS 352
Rev 5-65

LABORATORY NO 75W1209

MATERIALS TESTING REPORT	U. S. DEPARTMENT of AGRICULTURE SOIL CONSERVATION SERVICE	COMPACTION AND PENETRATION RESISTANCE

PROJECT and STATE: Higinbotham Brook, New York.

FIELD SAMPLE NO: B-126.1 | LOCATION: Borrow. | DEPTH: 1-11'

GEOLOGIC ORIGIN | TESTED AT: SML-LINCOLN | APPROVED BY: DS | DATE: 5-6-75

CLASSIFICATION GC LL 29 PI 9 | CURVE NO. 2 OF 3

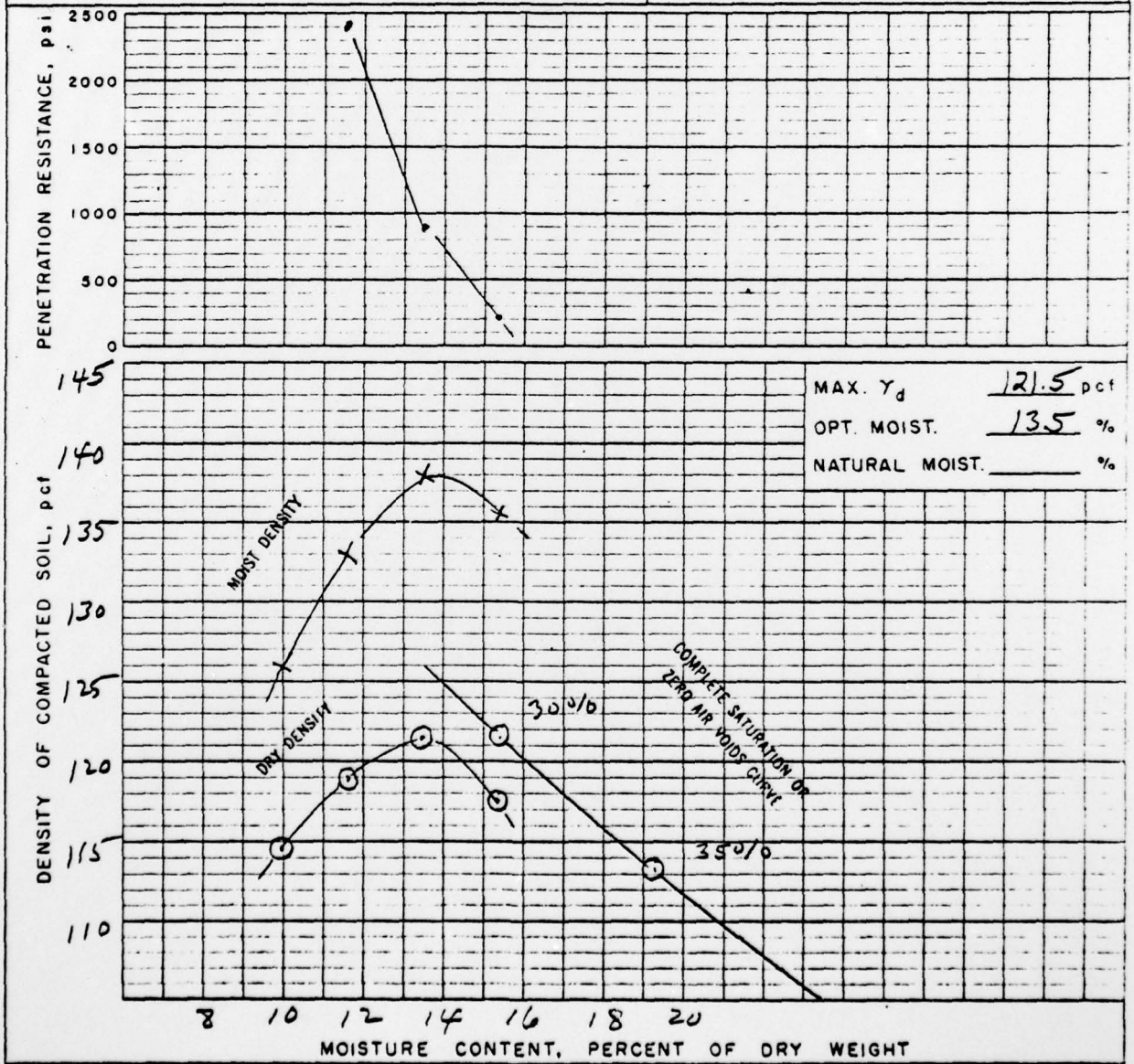
MAX. PARTICLE SIZE INCLUDED IN TEST <#4 "

SPECIFIC GRAVITY (G_s) { MINUS NO. 4 2.78 / PLUS NO. 4 ____

STD. (ASTM D-698) ☒; METHOD A

MOD. (ASTM D-1557) ☐; METHOD ____

OTHER TEST ☐ (SEE REMARKS)



REMARKS

CURVE IS FOR THE MINUS NO. 4 FRACTION

GRADATION OF TOTAL SAMPLE

< NO. 200 27 %; < NO. 4 59 %; < 3 IN. 100 %

SCS-ENG-354
Rev. 3-70
File Code ENG-13-18

Ht. = 53' Class C

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

5/8/75

NEW YORK

Laboratory Sample Number	Field Number	Location and Description	Depth	Field Classification	Mechanical Analysis Grain Size Distribution Expressed as Percent Finer by Dry Weight																		Atterberg Limits	
					Fines					Sand						Gravel								
					0.002	0.005	0.02	0.05	#200 0.074	#140 0.105	#60 0.250	#40 0.42	#20 0.84	#10 2.0	#4 4.76	3/8" 9.525	1/2" 12.7	3/4" 19.05	1" 25.4	1 1/2" 38.1	3" 76.2	L.L.	P.I.
75W		Higinbotham Brook																						
1208	A-204	1 Emer. Spwy L. Bag	1-2'		23	34	48	58	60	63	74	77	80	82	85	90	92	95	97	99	100	34	12
																							DRY	
1209	B-126	1 Borrow L. Bag	1-11'		11	17	24	26	27	27	28	29	33	40	59	72	77	84	89	92	100	29	9
																							DRY	
1210	G-608	1 Diversion L. Bag	1-8'		24	33	50	63	77	83	96	98	99	100								25	9

DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL MECHANICS LABORATORY DATA
Sheet 1 of 1

MECHANICAL ANALYSIS (% EXPRESSED AS PERCENT FINER BY DRY WEIGHT)											ATTERBERG LIMITS		UNIFIED CLASSIFICATION	SOLUBLE SALTS %	DISPERSION %	MOISTURE - DENSITY RELATIONSHIPS (☒ STANDARD ☐ MODIFIED)			UNDISTURBED SAMPLE DATA		G_s	SPECIAL TESTS					
SAND				GRAVEL																							
#40 0.42	#20 0.84	#10 2.0	#4 4.76	3/8" 9.525	1/2" 12.7	3/4" 19.05	1" 25.4	1 1/2" 38.1	3" 76.2		LL	PI			% Moist Soil	CURVE NO	MAX γ_d pcf	w_o %	γ_d g/cc	w_o %							
77	80	82	85	90	92	95	97	99	100		34	12	CL		29						2.69						3
																	DRY DENSITY < NO. 4										
																①	105.0	19.5									
29	33	40	59	72	77	84	87	92	100		29	9	GC		Dry 19												
																	DRY DENSITY < NO. 4										
																②	121.5	13.5			2.78						
98	99	100									25	9	CL		64	③	117.5	14.0			2.74						2.

2

MATERIALS TESTING REPORT	U. S. DEPARTMENT of AGRICULTURE SOIL CONSERVATION SERVICE	COMPACTION AND PENETRATION RESISTANCE

PROJECT AND STATE: Higinbotham Brook, New York

FIELD SAMPLE NO: G-6081 | LOCATION: Diversion | DEPTH: 1-8'

GEOLOGIC ORIGIN | TESTED AT: SML-LINCOLN | APPROVED BY | DATE: 5/29/75

CLASSIFICATION CL LL 25 PI 9 | CURVE NO. 3 OF 3

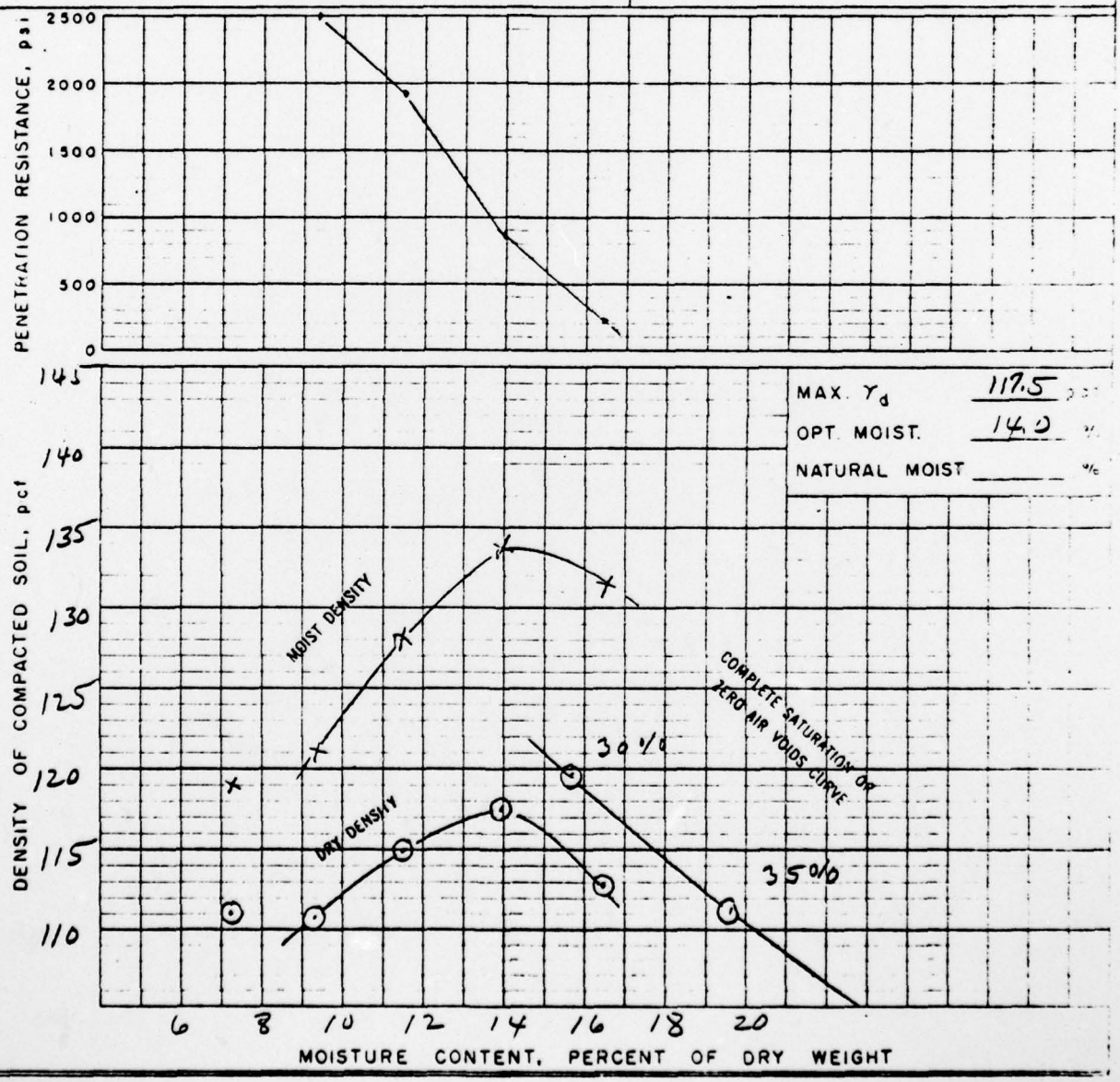
MAX. PARTICLE SIZE INCLUDED IN TEST < #4 "

SPECIFIC GRAVITY (G_s) { MINUS NO. 4 2.74 ; PLUS NO. 4 ____

STD (ASTM D-698) ☒; METHOD A

MOD (ASTM D-1557) ☐; METHOD ____

OTHER TEST ☐ (SEE REMARKS)



REMARKS

SCS-347-B-57
Tabular Computations

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

TOTAL VOL FOR D = 46,810

HUNTINGTON CR. WATERSHED

SOIL SUMMARY

FIELD NO.	LAB NO	LOCATION	CLASSIFICATION	DEPTH	% G	% S	% F	L.L.	P.I.	TYPE		VOLUMES DIV	VOLUMES B. A.		TOTAL VOLUME		
12.1		& DAM	SM	½-3	5	53	42	NP	NP	A	}	9100	3330		12,430		
204.1		Em Spwy	SC-SM	1-2	15	39	46	25	5	"	}				6.707		
126.1		Borr. A.	GC-GM	1-11	45	42	13	25	6	B	}		6707				
302.1		P. S.	GC-GW	3.	55	33	12	30	9	B	}						
127.1		Borr. A.	ML	3-11	0	25	75	NP	NP	D	}						
602.1		DIV.	ML	3-5	0	43	57	NP	NP	D	}	2600	8650		11,250		
602.2		DIV.	ML	5-10	0	16	84	NP	NP	D	}						
125.1		Borr. A.	SM	3½-10	4	60	36	NP	NP	F	}						
608.2		DIV.	SM	6-12	3	51	46	NP	NP	F	}						
11.1		& Dam	CL-ML	2-12	3	17	80	22	7	G	}						
603.1		DIV.	CL-ML	1-2	3	37	60	40	13	G	}						
604.1		DIV.	ML	3-11	3	22	75	18	1	G	}	10,650			10,650		
608.1		DIV.	CL-ML	1-8	11	30	59	22	7	G	}						
609.1		D.V.	CL-ML	2.	2	19	79	25	7	G	}				5250		
603.2		DIV	SC	2-4	38	48	14	28	9	F		5250					
										H		1750			1750		
														TOTAL	46,420		
										J		5250					
											γ_d	w_o	ϕ'	C'	ϕ	C	G_s
608		DIV.	CL	1-8	0	23	77	25	9	G	117.5	14.0	26½°	125	18°	300	2.74
126		B.A.	GC	1-11	41	32	27	29	9	B	121.5	13.5	27°	325	14½°	650	2.78
204		E.S.	CL	1-2	15	25	60	34	12	A	105.0	19.5	35°	0	14½°	500	2.69

SLICE	h'	W	T	N
1	2.6	5.8	0	3.2
2	7.4	15.2	1.3	7.7
3	11.0	22.7	2.8	11.0
4	13.6	28.0	5.0	13.6
5	15.3	31.6	7.2	14.8
6	14.7	30.3	8.7	13.7
7	12.8	26.4	9.0	10.8
8	10.9	22.5	8.6	8.8
9	8.0	15.4	7.0	13.7
10	3.1	7.1	3.8	6.3
		Σ	53.4	103.5

R = 379'

SOIL PROPERTIES

$\phi = 14°$ $\tan\phi = 0.249$

$C = 350$

$\gamma_d = 105 = 1.68$ W.C.

$\gamma_m = 120 = 1.92$ W.C.

$G_s = 2.70$

$\gamma_{SAT} = 128.5 = 2.06$ W.C.

$V_s = 105 \times \frac{1}{2.7} \times \frac{1}{62.4} = 0.623$

$V_v = 1.0 - 0.623 = 0.377$

$\gamma'_{SAT} = 105 + (0.377 \times 62.4) = 128.5$

$$\frac{1}{S.F.} = \frac{\Sigma T}{\Sigma \tan\phi N + CL}$$

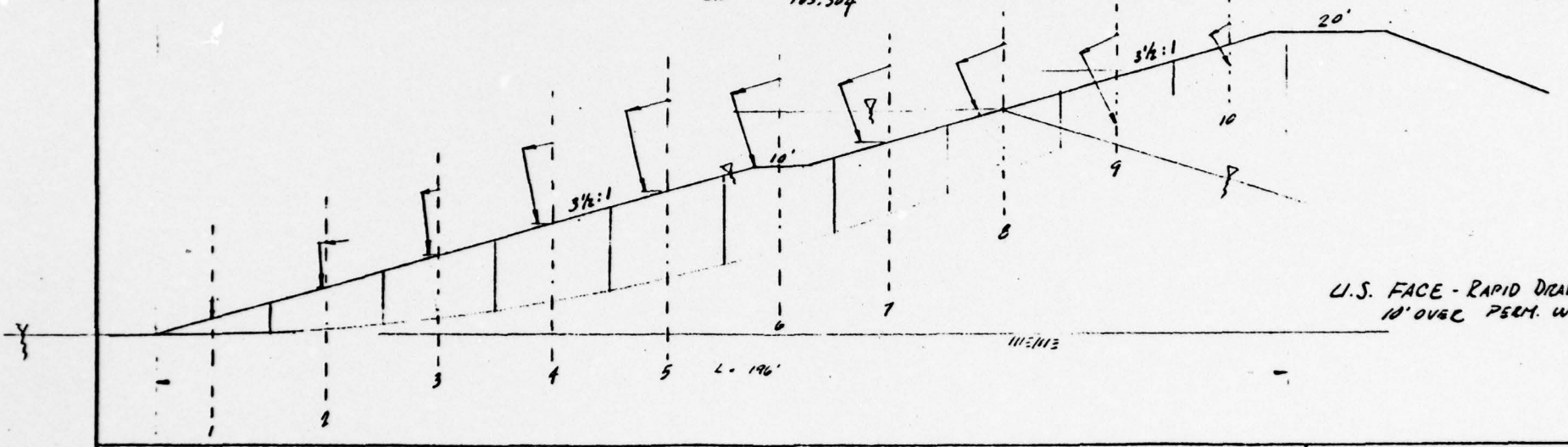
$$L = \frac{\Sigma}{57.3} \times 379'$$

$$= \frac{31}{57.3} \times 379' = 205'$$

$$\frac{1}{S.F.} = \frac{53.4\,(19.6)\,62.4}{25.8\,(19.6)\,62.4 + 71{,}750}$$

$$\frac{1}{S.F.} = \frac{65.310}{103.304} = 0.632 \qquad \therefore \quad SF = 1.58$$

SAFETY FACTOR



U.S. FACE - RAPID DRAWDOWN. 10' OVER PERM. WATER

REFERENCE	U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE ASSISTING SOIL CONSERVATION DISTRICT	DRAWING NUMBER SHEET ___ OF ___ SHEETS DATE ___

R = 331'

$\theta = 33°$

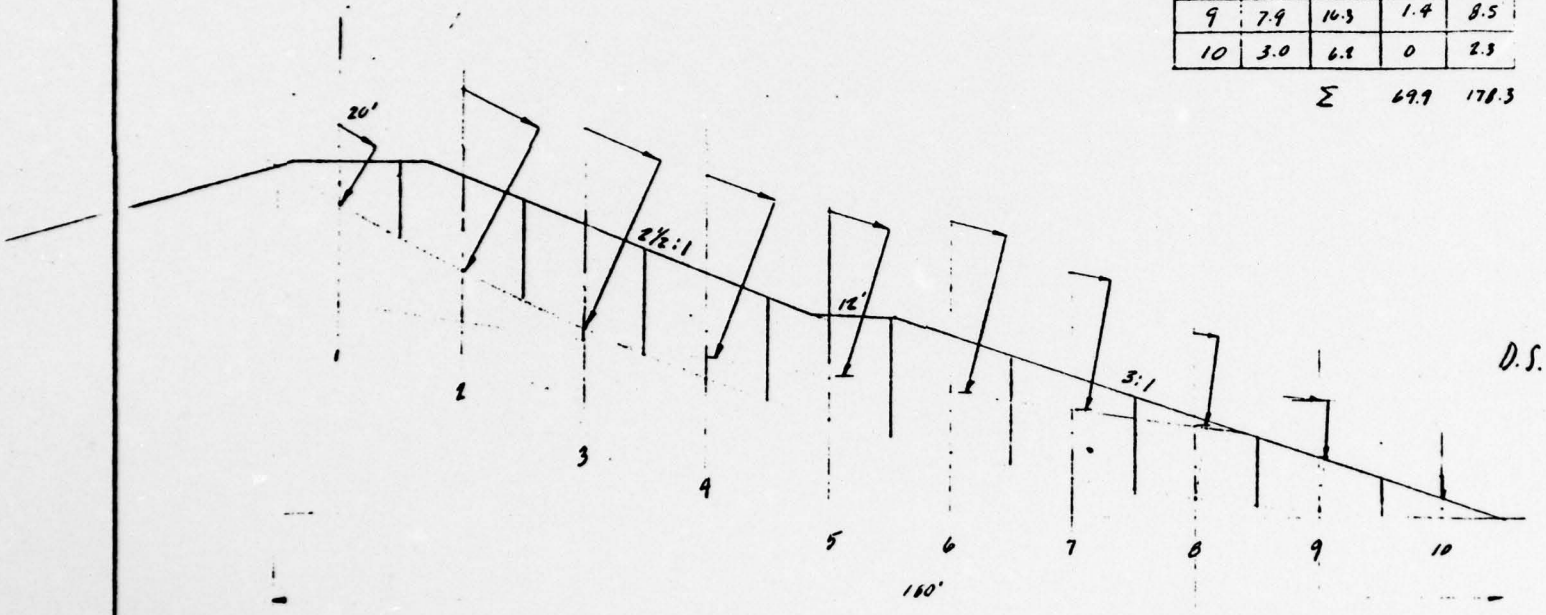
$L = \frac{\theta}{57.3} \cdot 331 = 190.6$

$$S.F. = \frac{\Sigma \tan\phi\, N + CL}{\Sigma T}$$

$$= \frac{178.3 \times 0.249 \times 62.4 \times 18 + 350\,(190.6)}{69.9 \times 62.4 \times 18}$$

$$= \frac{49,466.6 + 66,780}{78,511.7} = 1.485$$

SLICE	h'	W	T	N
1	6.2	11.90	6.2	10.2
2	14.2	27.3	12.2	24.9
3	15.5	30.0	12.0	27.7
4	12.7 3.0	24.6 2.2 30.4	10.8	25.2
5	9.2 2.5	17.7 10.4 31.1	9.0	23.0
6	8.6 0.8	16.5 18.1 34.6	8.6	24.1
7	5.0 10.3	9.6 21.2 30.8	5.9	19.8
8	1.4 10.2	2.7 21.0 23.5	3.8	13.3
9	7.9	16.3	1.4	8.5
10	3.0	6.2	0	2.3
		Σ	69.9	178.3



D.S. FACE - STEADY SEEPAGE

REFERENCE	U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE ASSISTING SOIL CONSERVATION DISTRICT	DRAWING NUMBER SHEET ___ OF ___ SHEETS DATE ___

SLOPE STABILITY

TEMPLATE INPUT DATA SHEET

TSC-UD-202A
4/8/68 (REV. 3/71)

12

SHEET 1 OF 2

PLOT

NO. PLOT

TEMPLATE INFORMATION

TITLE

CARD NO.

HIGINBOTHAM BROOK WATERSHED NEW YORK BY JDT 6-16-75 CK JAB 6/18/75		1
WITH WIDTH THREADS		

LINE	COORDINATES FIRST POINT X_1 FT.	Y_1 FT.	SECOND POINT X_2 FT.	Y_2 FT.	DENSITY BELOW LINE	SHEAR PARAMETERS ABOVE LINE PHI	C	BELOW LINE PHI	C	
1	-9.0	0.0	9.0	0.0	120.0	0.0	0.0	14.0	350.0	2
2	9.0	0.0	66.0	-22.8	120.0	0.0	0.0	14.0	350.0	3
3	66.0	-22.8	78.0	-23.3	120.0	0.0	0.0	14.0	350.0	4
4	78.0	-23.3	168.3	-53.4	120.0	0.0	0.0	14.0	350.0	5
5	168.3	-53.4	1000.0	-53.4	—	0.0	0.0	—	—	6
6	168.3	-53.4	115.0	-53.4	—	14.0	350.0	—	—	7
7	115.0	-53.4	-55.9	-13.4	-128.5	14.0	350.0	14.0	350.0	8
8	-9.0	0.0	-55.9	-13.4	120.0	0.0	0.0	14.0	350.0	9
9	-55.9	-13.4	-88.8	-22.8	-128.5	0.0	0.0	14.0	350.0	10
10	-88.8	-22.8	-98.8	-23.3	-128.5	0.0	0.0	14.0	350.0	11
11	-98.8	-23.3	-204.2	-53.4	-128.5	0.0	0.0	14.0	350.0	12
12	-204.2	-53.4	-1000.0	-53.4	—	0.0	0.0	—	—	13
13	-204.2	-53.4	115.0	-53.4	—	14.0	350.0	—	—	14
END DATA										15

SLOPE STABILITY

GRID INPUT DATA SHEET

C-UD-202 B
8/68 (REV. 3/71)

GRID INFORMATION

GRID IDENTIFICATION	CARD NO.
UPSTREAM SLOPE, DRAWDOWN 10' ABOVE PERMANENT POOL	16

LEFT X	Δ X	NO. X CTRS.	TOP Y	Δ Y	NO. Y CTRS.	RADIUS INC.	MIN. TAN.	MAX. TAN.	CARD NO.
-180.	10.	8.	155.	-10.	8.	5.	11.	13.	17

GRID INFORMATION

GRID IDENTIFICATION	CARD NO
DOWNSTREAM SLOPE, STEADY SEEPAGE WITH DRAIN	18

LEFT X	Δ X	NO. X CTRS.	TOP Y	Δ Y	NO. Y CTRS.	RADIUS INC.	MIN. TAN.	MAX. TAN.	CARD NO.
80.	10.	8.	135.0	-10.	8.	5.	4.	6.	19

GRID INFORMATION

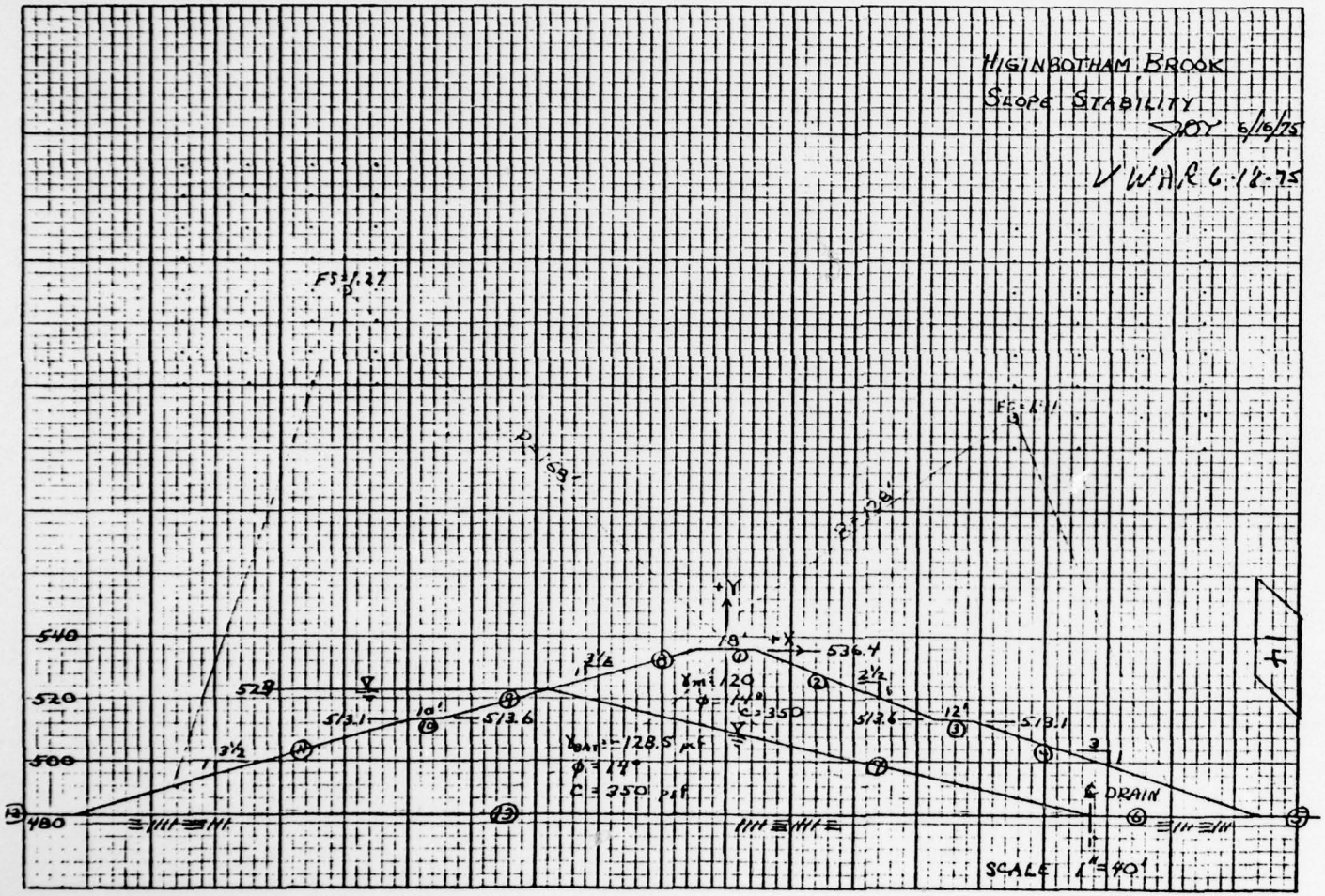
GRID IDENTIFICATION	CARD NO

LEFT X	Δ X	NO. X CTRS.	TOP Y	Δ Y	NO. Y CTRS.	RADIUS INC.	MIN. TAN.	MAX. TAN.	CARD NO.

GRID INFORMATION

GRID IDENTIFICATION	CARD NO

LEFT X	Δ X	NO. X CTRS.	TOP Y	Δ Y	NO. Y CTRS.	RADIUS INC.	MIN. TAN.	MAX. TAN.	CARD NO.



**********ECHO PRINT OF INPUT LISTING**********

```
NO PLOT
TEMPLATE INFORMATION
HIGINBOTHAM BROOK WATERSHED NEW YORK  BY JDT 6-16-75  CK WAR  6 18 75   1

   1     -9.0     0.0     9.0     0.0   120.0     0.0     0.0    14.0   350.0
   2      9.0     0.0    66.0   -22.8   120.0     0.0     0.0    14.0   350.0
   3     66.0   -22.8    78.0   -23.3   120.0     0.0     0.0    14.0   350.0
   4     78.0   -23.3   168.3   -53.4   120.0     0.0     0.0    14.0   350.0
   5    168.3   -53.4  1000.0   -53.4     0.0     0.0     0.0     0.0     0.0
   6    168.3   -53.4   115.0   -53.4     0.0    14.0   350.0     0.0     0.0
   7    115.0   -53.4   -55.9   -13.4  -128.5    14.0   350.0    14.0   350.0
   8     -9.0     0.0   -55.9   -13.4   120.0     0.0     0.0    14.0   350.0
   9    -55.9   -13.4   -88.8   -22.8  -128.5     0.0     0.0    14.0   350.0
  10    -88.8   -22.8   -98.8   -23.3  -128.5     0.0     0.0    14.0   350.0
  11    -98.8   -23.3  -204.2   -53.4  -128.5     0.0     0.0    14.0   350.0
  12   -204.2   -53.4 -1000.0   -53.4     0.0     0.0     0.0     0.0     0.0
  13   -204.2   -53.4   115.0   -53.4     0.0    14.0   350.0     0.0     0.0
END DATA
GRID INFORMATION
UPSTREAM SLOPE DRAWDOWN 10' ABOVE PERMANENT POOL                          16
-180. 10.   8.    155.  -10.  8.    5.    11.   13.                       17
```

ADP-3636 06-20-75

HIGINBOTHAM BROOK WATERSHED NEW YORK BY JDT 6-16-75 CK WAR 6 18 75

Input

EMBANKMENT AND FOUNDATION INPUT DATA

	FIRST POINT X	FIRST POINT Y	SECOND POINT X	SECOND POINT Y	DENSITY IN LBS/CU.FT.	SHEAR PARAMETERS ABOVE LINE PHI	ABOVE LINE C	BELOW LINE PHI	BELOW LINE C
LINE 1	-9.0	0.0	9.0	0.0	120.0	0.0	0.	14.0	350.
LINE 2	9.0	0.0	66.0	-22.8	120.0	0.0	0.	14.0	350.
LINE 3	66.0	-22.8	78.0	-23.3	120.0	0.0	0.	14.0	350.
LINE 4	78.0	-23.3	168.3	-53.4	120.0	0.0	0.	14.0	350.
LINE 5	168.3	-53.4	1000.0	-53.4	0.0	0.0	0.	0.0	0.
LINE 6	168.3	-53.4	115.0	-53.4	0.0	14.0	350.	0.0	0.
LINE 7	115.0	-53.4	-55.9	-13.4	-128.5	14.0	350.	14.0	350.
LINE 8	-9.0	0.0	-55.9	-13.4	120.0	0.0	0.	14.0	350.
LINE 9	-55.9	-13.4	-88.8	-22.8	-128.5	0.0	0.	14.0	350.
LINE 10	-88.8	-22.8	-98.8	-23.3	-128.5	0.0	0.	14.0	350.
LINE 11	-98.8	-23.3	-204.2	-53.4	-128.5	0.0	0.	14.0	350.
LINE 12	-204.2	-53.4	-1000.0	-53.4	0.0	0.0	0.	0.0	0.
LINE 13	-204.2	-53.4	115.0	-53.4	0.0	14.0	350.	0.0	0.

HIGINBOTHAM BROOK WATERSHED NEW YORK BY JDT 6-16-75 CK WAR 6 18 75

UPSTREAM SLOPE DRAWDOWN 10' ABOVE PERMANENT POOL

****

ARC INPUT DATA

****

HORIZONTAL DISTANCE FROM CENTERLINE OF DAM TO LEFT MOST ARC CENTER = -180.0 FT.

HORIZONTAL DISTANCE BETWEEN ARC CENTERS = 10.0 FT.

NUMBER OF HORIZONTAL DISTANCES = 8

VERTICAL DISTANCE FROM TOP OF DAM TO UPPER MOST ARC CENTER = 155.0 FT.

VERTICAL DISTANCE BETWEEN ARC CENTERS = -10.0 FT.

NUMBER OF VERTICAL DISTANCES = 8

DISTANCE BETWEEN ARC RADIUS = 5 FT.

LINE NUMBER TANGENT TO MINIMUM ARC = 11

LINE NUMBER TANGENT TO MAXIMUM ARC = 13

****

MINIMUM SAFETY FACTOR AND ASSOCIATED RADIUS FOR SELECTED ARC CENTERS

****

VERTICAL DISTANCE	HORIZONTAL DISTANCE -180.0		-170.0		-160.0		-150.0		-140.0		-130.0		-120.0		-110.0	
	RAD	FS	RAD	FS	RAD	FS	RAD	FS	RAD	FS	RAD	FS	RAD	FS	RAD	FS
155.0	208	1.691	208	1.537	208	1.436	208	1.364	208	1.306	208	1.286	208	1.298	208	1.348
145.0	198	1.710	198	1.555	198	1.450	198	1.371	198	1.314	198	1.283	198	1.286	198	1.326
135.0	188	1.729	188	1.573	188	1.463	188	1.382	188	1.329	188	1.282	188	1.281	188	1.308
125.0	178	1.748	178	1.594	178	1.475	178	1.393	178	1.336	178	1.289	178	1.277	178	1.293
115.0	168	1.761	168	1.614	168	1.491	168	1.405	168	1.344	168	1.300	168	1.274	168	1.282
105.0	158	1.769	158	1.631	158	1.509	158	1.421	158	1.357	158	1.311	158	1.277	158	1.279
95.0	148	1.785	148	1.646	148	1.533	148	1.437	148	1.368	148	1.322	148	1.287	148	1.277

AD-A077 425 NEW YORK STATE DEPT OF ENVIRONMENTAL CONSERVATION ALBANY F/G 13/13
NATIONAL DAM SAFETY PROGRAM. HIGINBOTHAM BROOK WATERSHED PROJEC--ETC(U)
SEP 79 G KOCH DACW51-79-C-0001
UNCLASSIFIED NL

2 OF 2
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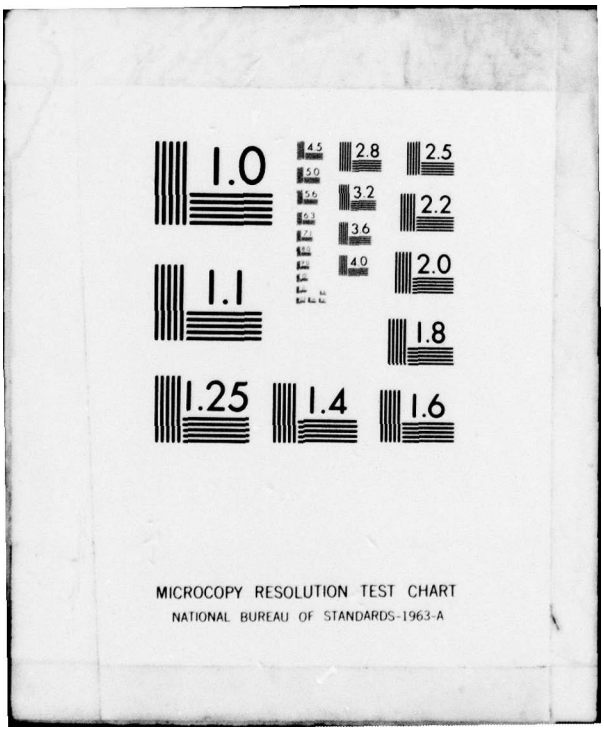

1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
4.5
5.0
5.6
6.3
7.1
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

MS.G	138	1.818	138	1.657	138	1.550	138	1.453	138	1.384	138	1.336	138	1.303	138	1.27

```
**********ECHO PRINT OF INPUT LISTING**********

GRID INFORMATION
DOWNSTREAM SLOPE STEADY SEEPAGE WITH DRAIN                          18
80.   10.   8.    135.  -10.  8.    5.    4.    6.                  19
```

****

EMBANKMENT AND FOUNDATION INPUT DATA

****

	FIRST POINT X	FIRST POINT Y	SECOND POINT X	SECOND POINT Y	DENSITY IN LBS/CU.FT.	SHEAR PARAMETERS ABOVE LINE PHI	ABOVE LINE C	BELOW LINE PHI	BELOW LINE C
LINE 1	-9.0	0.0	9.0	0.0	120.0	0.0	0.	14.0	350.
LINE 2	9.0	0.0	66.0	-22.8	120.0	0.0	0.	14.0	350.
LINE 3	66.0	-22.8	78.0	-23.3	120.0	0.0	0.	14.0	350.
LINE 4	78.0	-23.3	168.3	-53.4	120.0	0.0	0.	14.0	350.
LINE 5	168.3	-53.4	1000.0	-53.4	0.0	0.0	0.	0.0	0.
LINE 6	168.3	-53.4	115.0	-53.4	0.0	14.0	350.	0.0	0.
LINE 7	115.0	-53.4	-55.9	-13.4	-128.5	14.0	350.	14.0	350.
LINE 8	-9.0	0.0	-55.9	-13.4	120.0	0.0	0.	14.0	350.
LINE 9	-55.9	-13.4	-88.8	-22.8	-128.5	0.0	0.	14.0	350.
LINE 10	-88.8	-22.8	-98.8	-23.3	-128.5	0.0	0.	14.0	350.
LINE 11	-98.8	-23.3	-204.2	-53.4	-128.5	0.0	0.	14.0	350.
LINE 12	-204.2	-53.4	-1000.0	-53.4	0.0	0.0	0.	0.0	0.
LINE 13	-204.2	-53.4	115.0	-53.4	0.0	14.0	350.	0.0	0.

HIGINBOTHAM BROOK WATERSHED NEW YORK BY JDT 6-16-75 CK WAR 6 18 75

DOWNSTREAM SLOPE STEADY SEEPAGE WITH DRAIN

****

ARC INPUT DATA

****

HORIZONTAL DISTANCE FROM CENTERLINE OF DAM TO LEFT MOST ARC CENTER = 80.0 FT.

HORIZONTAL DISTANCE BETWEEN ARC CENTERS = 10.0 FT.

NUMBER OF HORIZONTAL DISTANCES = 8

VERTICAL DISTANCE FROM TOP OF DAM TO UPPER MOST ARC CENTER = 135.0 FT.

VERTICAL DISTANCE BETWEEN ARC CENTERS = -10.0 FT.

NUMBER OF VERTICAL DISTANCES = 8

DISTANCE BETWEEN ARC RADIUS = 5 FT.

LINE NUMBER TANGENT TO MINIMUM ARC = 4

LINE NUMBER TANGENT TO MAXIMUM ARC = 6

****

MINIMUM SAFETY FACTOR AND ASSOCIATED RADIUS FOR SELECTED ARC CENTERS

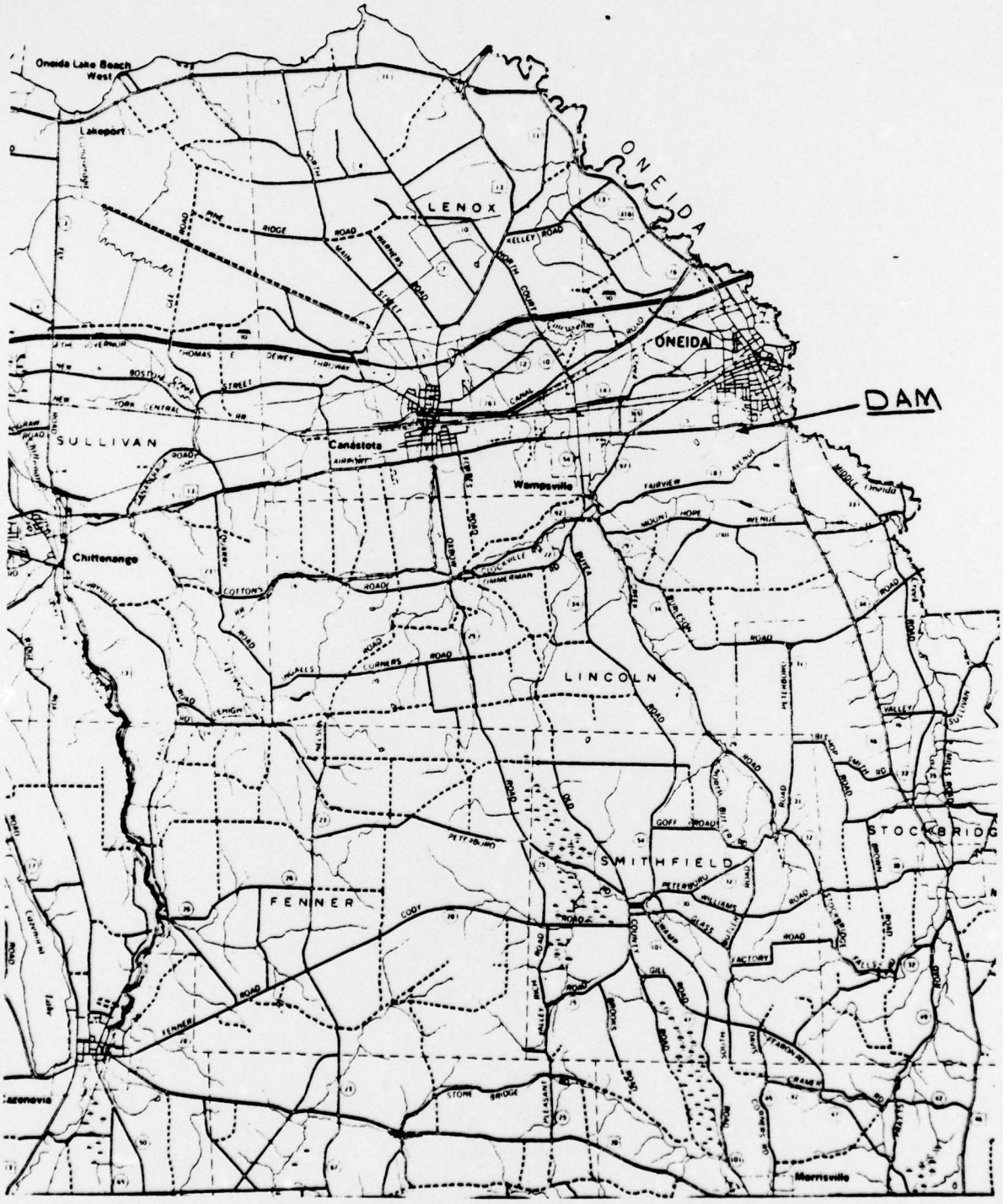
****

VERTICAL DISTANCE	HORIZONTAL DISTANCE 80.0		90.0		100.0		110.0		120.0		130.0		140.0		150.0	
	RAD	FS	RAD	FS	RAD	FS	RAD	FS	RAD	FS	RAD	FS	RAD	FS	RAD	FS
135.0	188	1.603	188	1.517	188	1.464	188	1.443	188	1.477	188	1.558	188	1.717	188	1.925
125.0	178	1.573	178	1.489	178	1.444	178	1.435	178	1.486	178	1.586	178	1.760	178	1.970
115.0	168	1.539	168	1.467	168	1.429	168	1.439	168	1.500	168	1.630	168	1.806	168	2.013
105.0	158	1.510	158	1.443	158	1.418	158	1.448	158	1.527	158	1.678	158	1.849	158	2.043
95.0	148	1.481	148	1.425	148	1.417	148	1.460	148	1.564	148	1.722	148	1.892	148	2.054
85.0	138	1.455	138	1.410	138	1.423	138	1.482	138	1.618	138	1.772	138	1.923	138	2.070
75.0	128	1.433	128	1.408	128	1.435	128	1.519	128	1.664	128	1.813	128	1.958	128	2.047

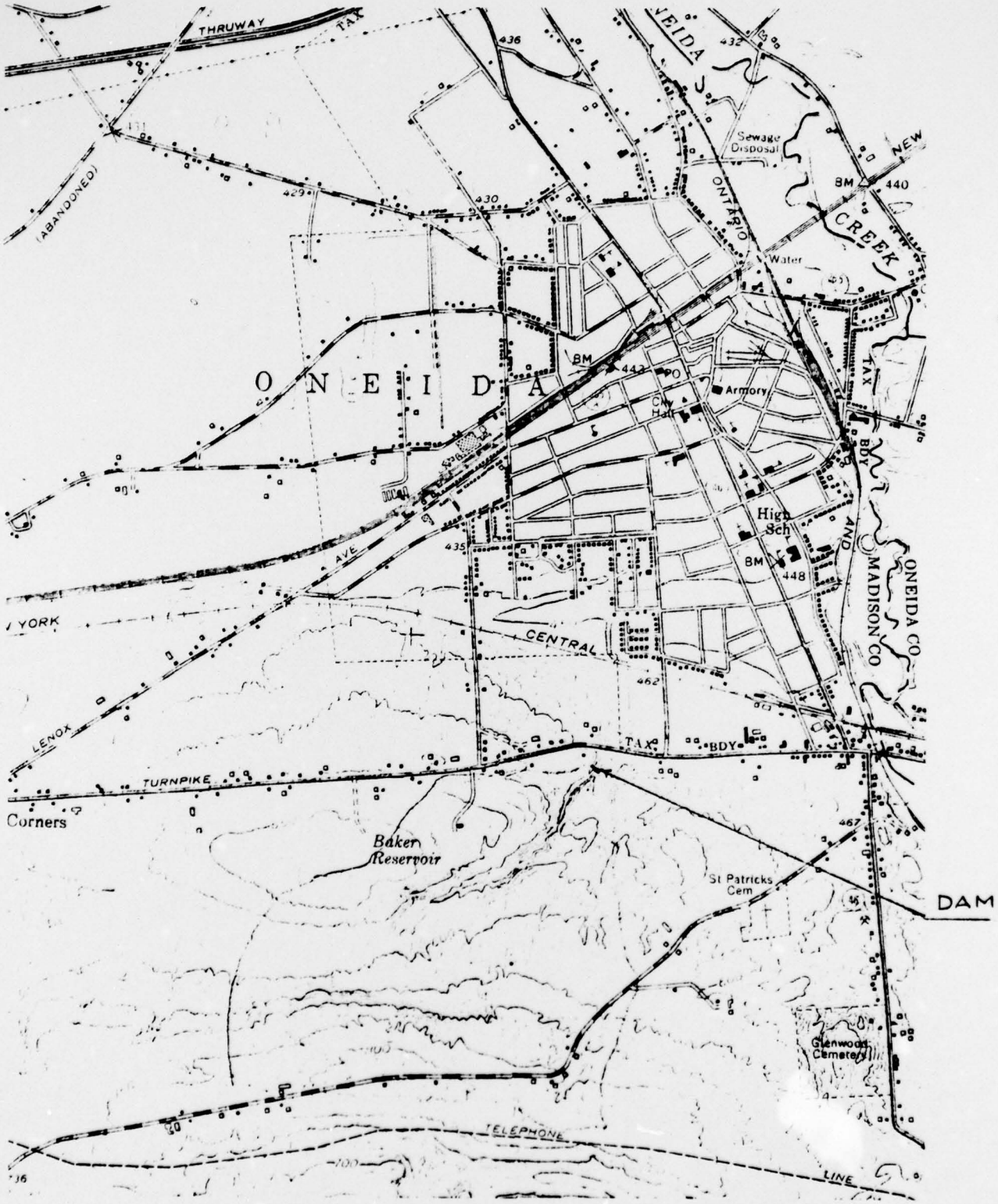
65.0	118	1.417	118	1.414	118	1.459	118	1.578	118	1.716	118	1.856	118	1.967	118	2.080			

APPENDIX G

DRAWINGS



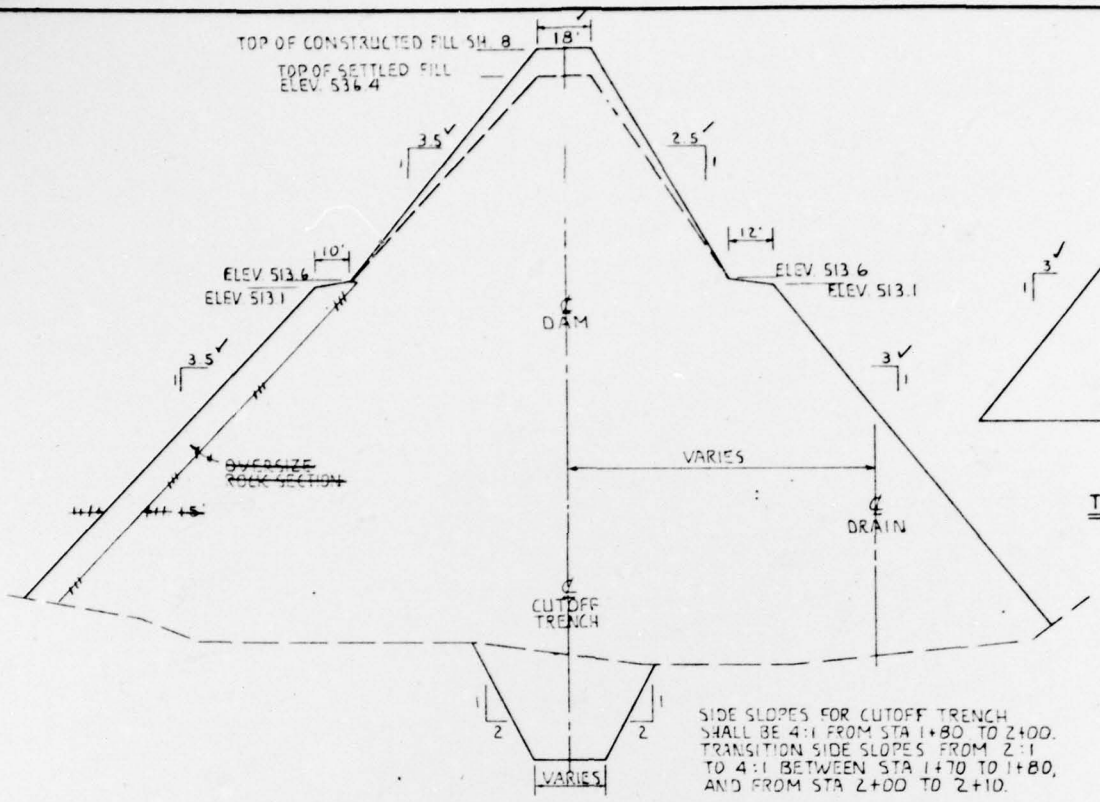
VICINITY MAP



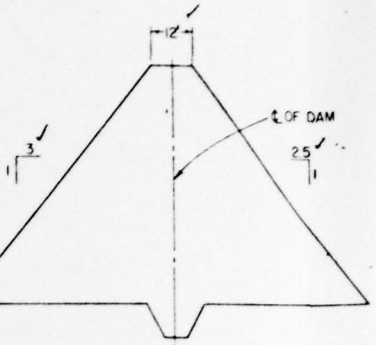
TOPOGRAPHIC MAP

LIST OF DRAWINGS
HIGINBOTHAM BROOK WATERSHED PROJECT

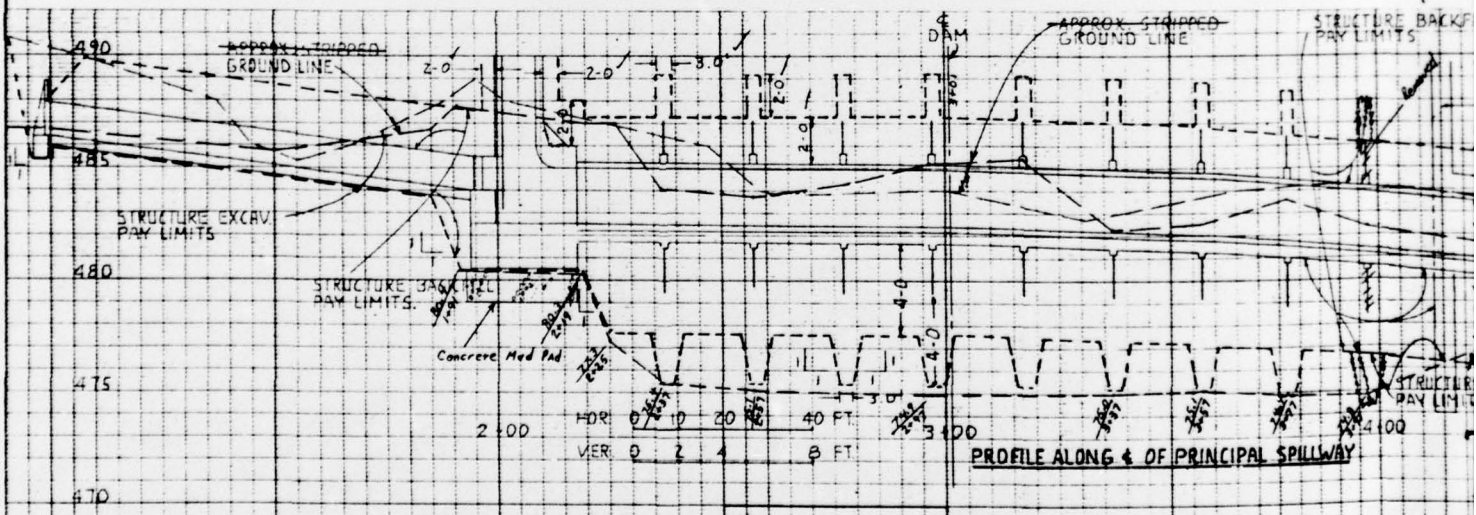
	Drawing # of 30
Plan of Storage Area	2
Plan of Structural Works	3&4
Sediment Basin	5
Diversion	7
Cutoff Trench Excavation	8&9
Emergency Spillway	10
Fill Placement & Principal Spillway - Dam 1	11
Drainage System - Dam 1	12&13
Plan Profile of Principal Spillway	14
Riser Structural Details	15
Principal Spillway Conduit Details	20
Reservoir Drain Conduit Details	21
Log of Test Holes	24&25



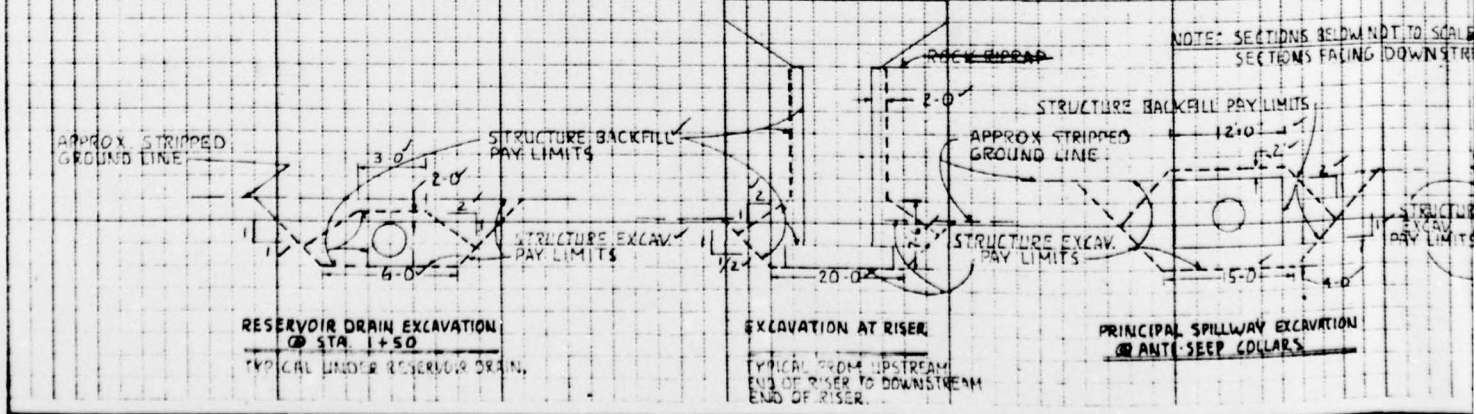
TYPICAL SECTION OF DAM-1

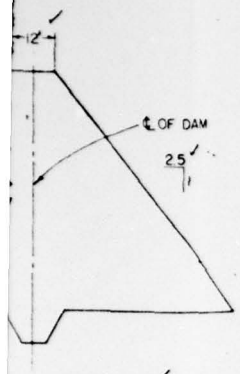


TYPICAL SECTION
(DAMS-2 & 3)



PROFILE ALONG ℄ OF PRINCIPAL SPILLWAY





SECTION
(S-2 & 3)

EARTH FILL REQUIREMENTS FOR DAM-1, 2, 83

MATERIAL 1/	MAX. ROCK SIZE 2/	MAXIMUM LIFT THICKNESS 3/	MINIMUM REQUIRED WATER CONTENT 4/	COMPACTION 5/	
				CLASS	DEFINITION
CL-ML, SC-SM, GC-GW AND GC-GM MATERIALS AS REPRESENTED BY: TP608 FROM 1' TO 8' TP204 FROM 1' TO 2' TP302 FROM 0' TO 3' TP126 FROM 1' TO 11'	6"	9"	2 1% BELOW OPTIMUM	A	100% OF MAXIMUM DENSITY BY ASTM-D-698

1/ THE PLACEMENT TABLE INDICATES ESTIMATED USE OF MATERIALS.

2/ A) MAXIMUM ROCK SIZE IN STRUCTURE BACKFILL COMPACTED BY MEANS OF MANUALLY DIRECTED POWER TAMPERS OR PLATE TAMPERS SHALL BE 3".
B) OVERSIZE MATERIAL (OVER 6"), AND SHALE FRAGMENTS PLACED IN THE EARTH FILL SHALL BE RAKED TO THE PORTION OF THE DAM LABELED OVERSIZE ROCK SECTION AS SHOWN ON THE DRAWING.

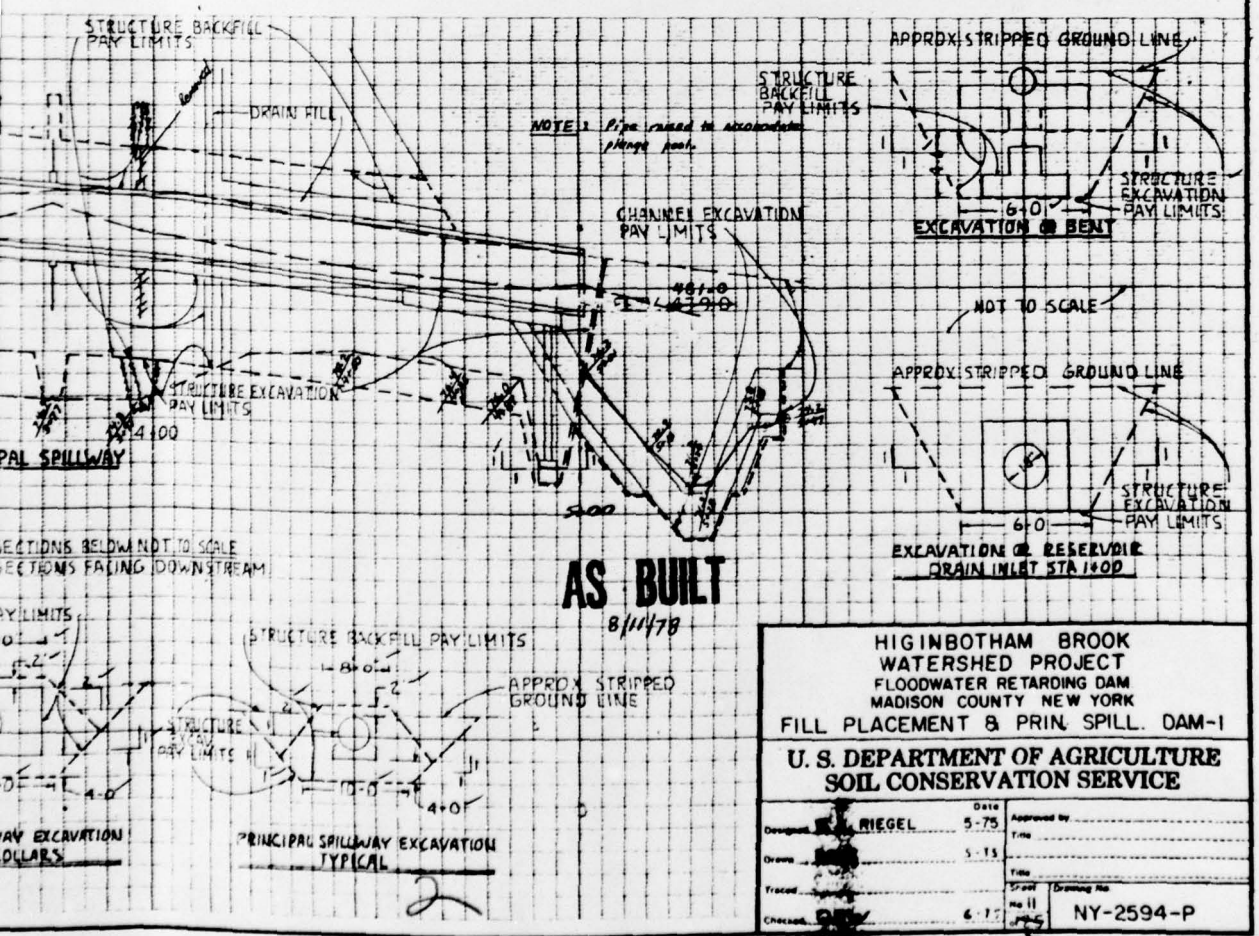
3/ ~~MAXIMUM LIFT THICKNESS PRIOR TO COMPACTION. THE MAXIMUM LIFT THICKNESS OF THE OVERSIZE ROCK SECTION SHALL BE NO GREATER THAN 18" PRIOR TO COMPACTION.~~ NO OVERSIZED SECTION.

4/ WATER CONTENT AT TIME OF COMPACTION.

5/ USE CLASS "C" COMPACTION IN AREA OF THE DAM CONTAINING OVERSIZE MATERIAL. CLASS "C" COMPACTION SHALL CONSIST OF A MINIMUM OF THREE PASSES PER LIFT OF FILL BY A TAMPING ROLLER EXERTING A MINIMUM CONTACT PRESSURE OF 450 PSI, OR EQUIVALENT, AS APPROVED BY THE ENGINEER. THE FINAL NUMBER OF PASSES REQUIRED WILL BE DETERMINED BY THE ENGINEER IN THE FIELD.

CONSTRUCTION DETAILS

1. OVERSIZE ROCK SECTION BOUNDARY IS APPROXIMATE, ADJUSTMENTS WILL BE MADE BY THE ENGINEER TO UTILIZE AVAILABLE MATERIAL.
2. MATERIAL PLACED IN THE OVERSIZE ROCK SECTION SHALL CONSIST OF OVERSIZE MATERIAL RAKED FROM THE EARTH FILL, AND SHALE FRAGMENTS FROM THE REQUIRED EXCAVATIONS.
3. TOPSOIL THAT IS SUITABLE FOR USE AND NOT USED ON THE SPECIFIED AREAS OF THE EMERGENCY SPILLWAY SHALL BE INCORPORATED WITHIN THE SLOPES OF THE EARTH FILL AS DIRECTED BY THE ENGINEER. THE SOURCE OF THE TOPSOIL SHALL BE WITHIN THE REQUIRED EXCAVATION.
4. THE LIMITS OF STRUCTURE BACKFILL WILL BE MEASURED TO OUTSIDE FACE OF RISER, AT MAXIMUM WALL THICKNESS, AS SHOWN ON THIS SHEET.

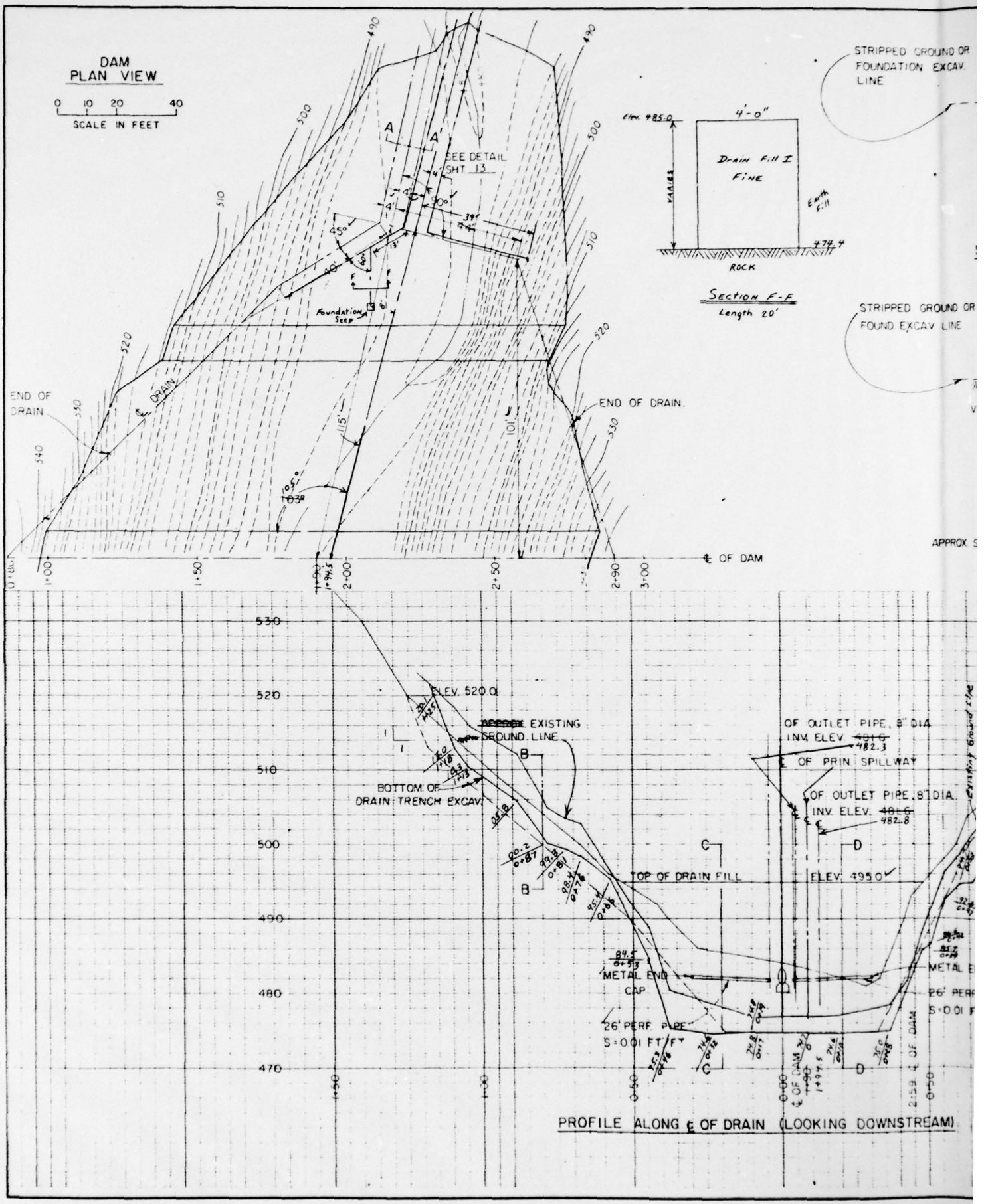


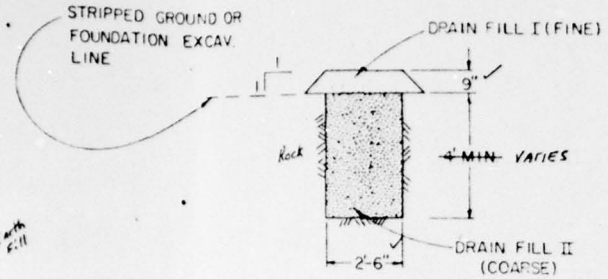
HIGINBOTHAM BROOK
WATERSHED PROJECT
FLOODWATER RETARDING DAM
MADISON COUNTY NEW YORK
FILL PLACEMENT & PRIN. SPILL. DAM-1

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

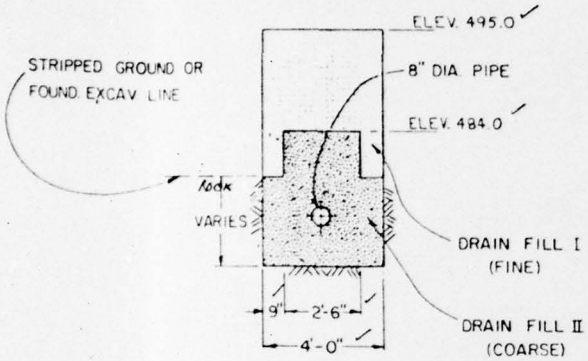
		Date		
Designed	RIEGEL	5-75	Approved by	
Drawn		5-75	Title	
Traced			Title	
Checked		6-75	Sheet No. 11 of 15 sheets	Drawing No. NY-2594-P

SCS-ENG-317, Rev. 5-68


DAM
PLAN VIEW
0 10 20 40
SCALE IN FEET
SEE DETAIL SHT 13
Foundation Seep
END OF DRAIN
DRAIN
END OF DRAIN
℄ OF DAM
STRIPPED GROUND OR FOUNDATION EXCAV. LINE
4'-0"
Drain Fill I Fine
ROCK
SECTION F-F
Length 20'
STRIPPED GROUND OR FOUND EXCAV LINE
ELEV. 520.0
EXISTING GROUND LINE
BOTTOM OF DRAIN TRENCH EXCAV.
TOP OF DRAIN FILL
ELEV. 495.0
METAL END CAP
26' PERF PIPE S=0.01 FT/FT
OF OUTLET PIPE, 8" DIA.
INV. ELEV. 481.6
482.3
OF PRIN. SPILLWAY
OF OUTLET PIPE, 8" DIA.
INV. ELEV. 481.6
482.8
PROFILE ALONG ℄ OF DRAIN (LOOKING DOWNSTREAM)



SECTION B-B & E-E



SECTION C-C & D-D

APPROX STA 0+55' LEFT, TO STA 0+50' RIGHT

NOT TO SCALE

DRAINAGE SYSTEM DETAILS

1. ASBESTOS-CEMENT DRAIN PIPE SHALL CONFORM TO SPECIFICATION 545 AND SHALL BE 8 INCH DIA. PRESSURE PIPE CLASS 200.

2. PROFILES AT THE BOTTOM OF ALL EXCAVATIONS ARE APPROXIMATE. THE REQUIRED FINISHED GRADES WILL BE ESTABLISHED IN THE FIELD BY THE ENGINEER AT THE TIME OF CONSTRUCTION.

QUANTITY SUMMARY

335 ~~225~~ CU. YDS. DRAIN FILL I (FINE)

202 ~~234~~ CU. YDS. DRAIN FILL II (COARSE)

156 L.F. STRAIGHT SECTION OF 8 INCH DIA. PERFORATED ASBESTOS-CEMENT PIPE.

47 L.F. STRAIGHT SECTION OF 8 INCH DIA. NON-PERFORATED ASBESTOS-CEMENT PIPE.

2 END CAPS.

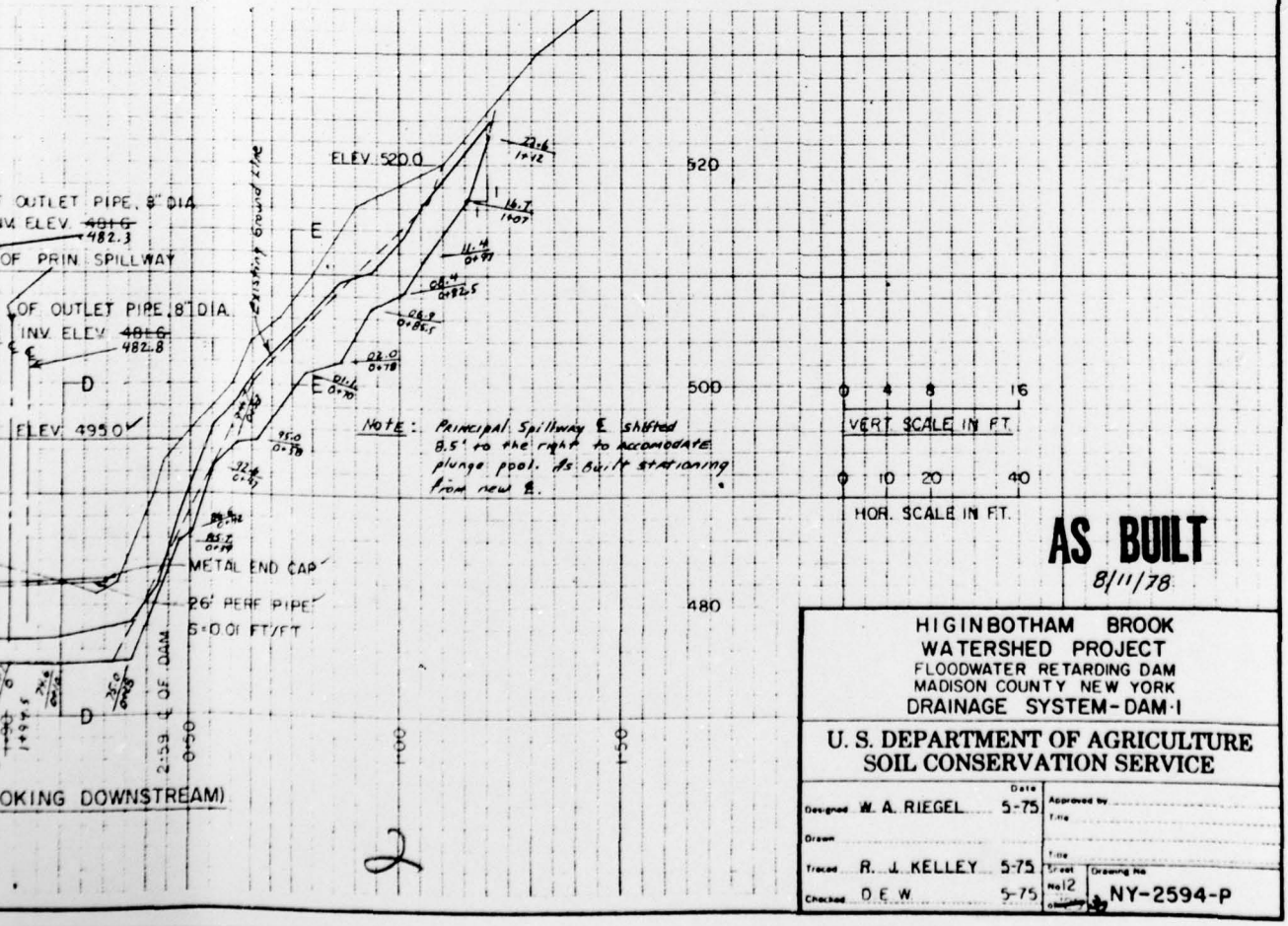
1 45° BEND-8 INCH DIA. CAST IRON

1 90° BEND-8 INCH DIA. CAST IRON

GRAIN SIZE DISTRIBUTION FOR DRAIN FILL

1. DRAIN FILL I (FINE) SHALL MEET THE GRADATION OF ASTM C33-67 FOR FINE AGGREGATE. IN ADDITION, THE PERCENTAGE OF MATERIAL IN DRAIN FILL I FINER THAN A #200 SIEVE SHALL NOT BE MORE THAN 3%.

2. DRAIN FILL II (COARSE) SHALL MEET THE GRADATION OF SIZE DESIGNATION 1 AS SHOWN IN TABLE 703-4 OF THE JAN. 2, 1973 STANDARD SPECIFICATIONS OF THE NEW YORK STATE DEPARTMENT OF TRANSPORTATION. IN ADDITION, THE PERCENTAGE OF MATERIAL IN DRAIN FILL II FINER THAN A #200 SIEVE SHALL NOT BE MORE THAN 3%.

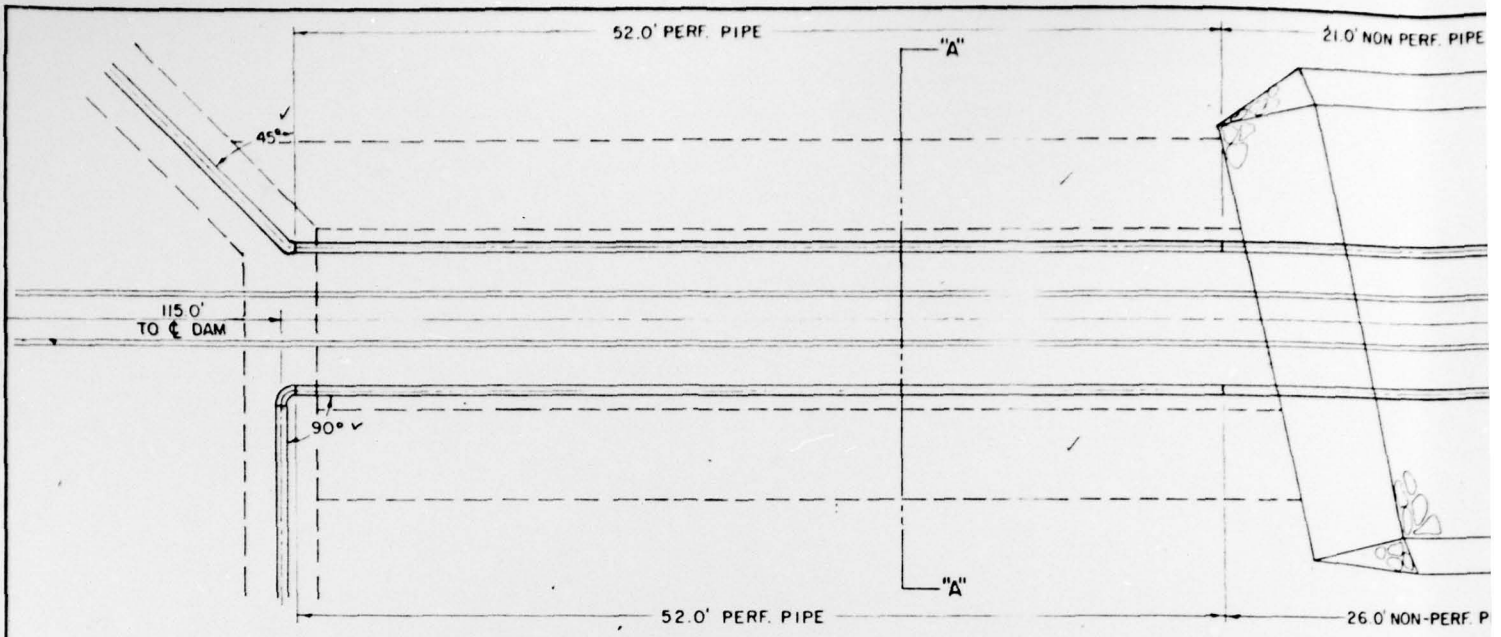


AS BUILT
8/11/78

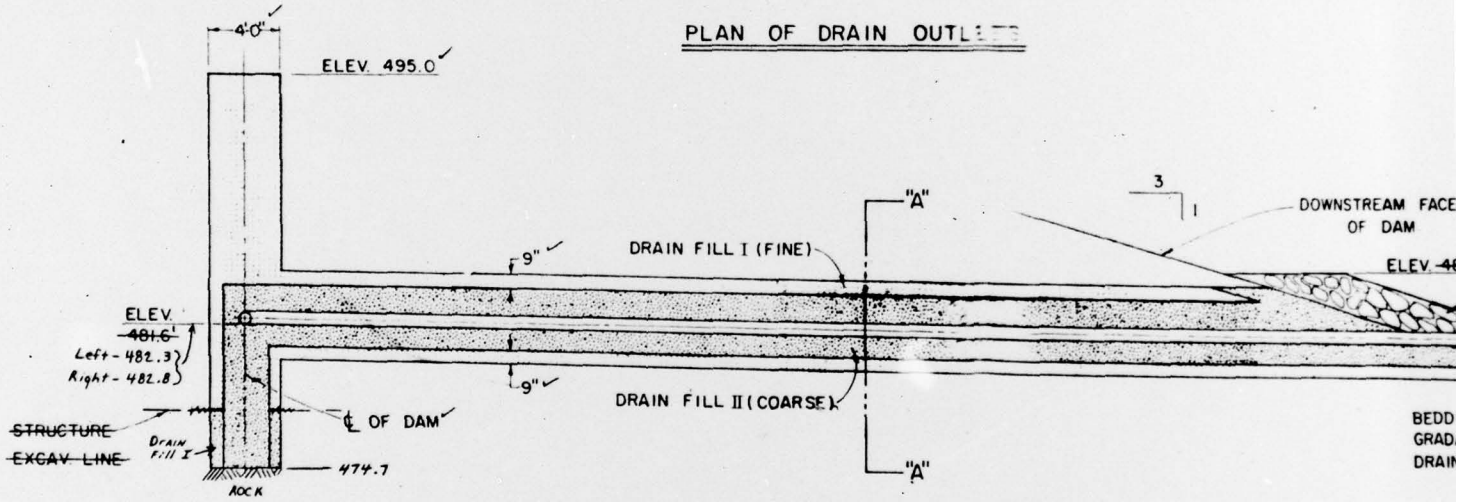
HIGINBOTHAM BROOK
WATERSHED PROJECT
FLOODWATER RETARDING DAM
MADISON COUNTY NEW YORK
DRAINAGE SYSTEM - DAM-1

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

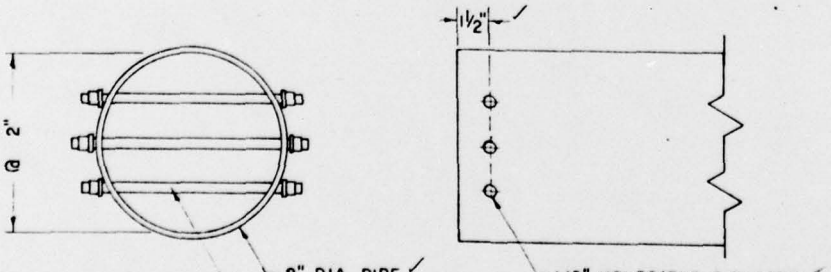
		Date	
Designed	W. A. RIEGEL	5-75	Approved by
Drawn			Title
Traced	R. J. KELLEY	5-75	Title
Checked	D. E. W.	5-75	Sheet No. 12 of sheets; Drawing No. NY-2594-P



PLAN OF DRAIN OUTL

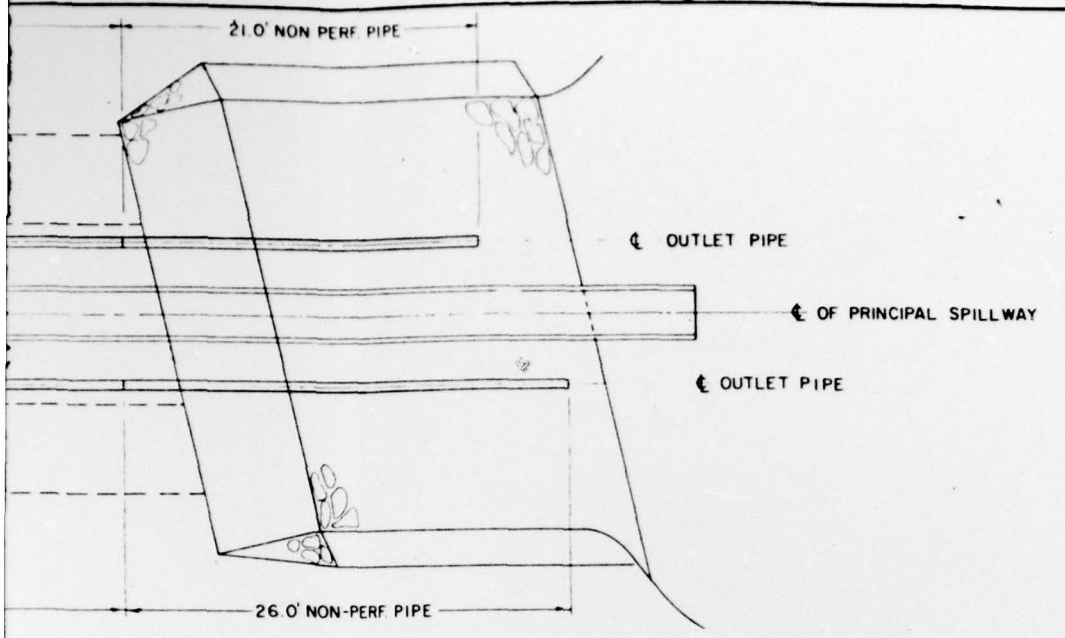


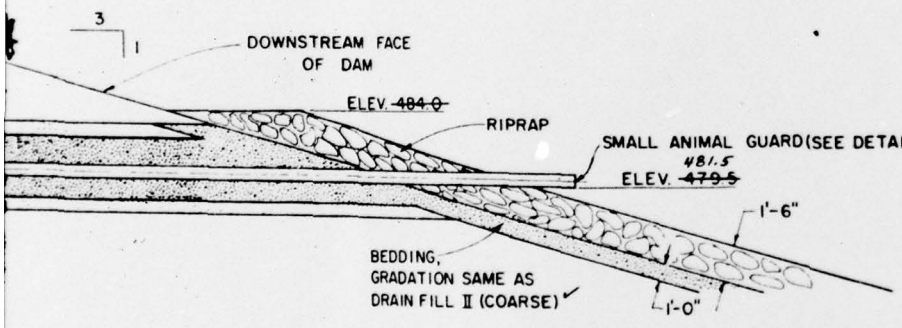
PROFILE ALONG DRAIN OUTL

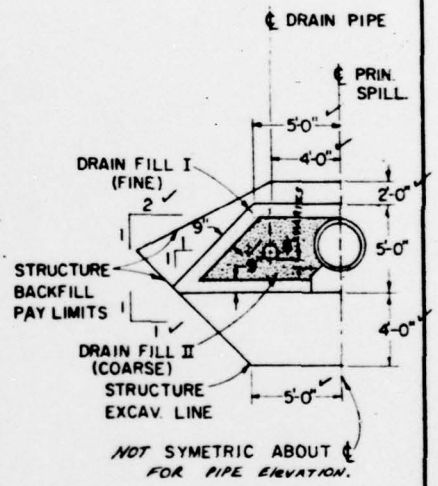


SMALL ANIMAL GUARD DETAILS

0 2
SCALE







SECTION "A"-"A"

AS BUILT
8/11/78

0 2 4 8
SCALE IN FT.

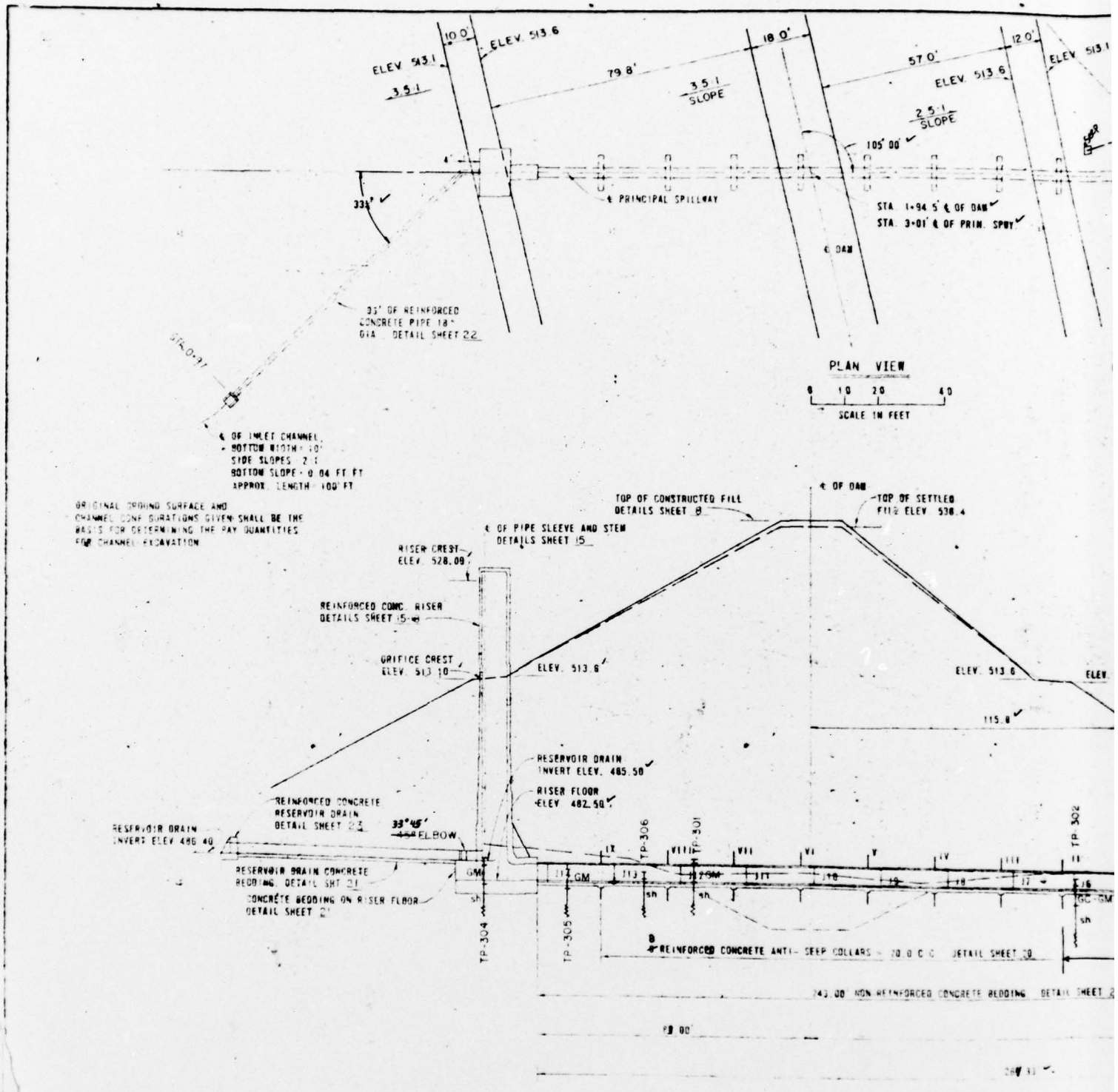
Note: Pipe inverts and slopes changed with the principal Spillway to accomodate change in plunge pool.

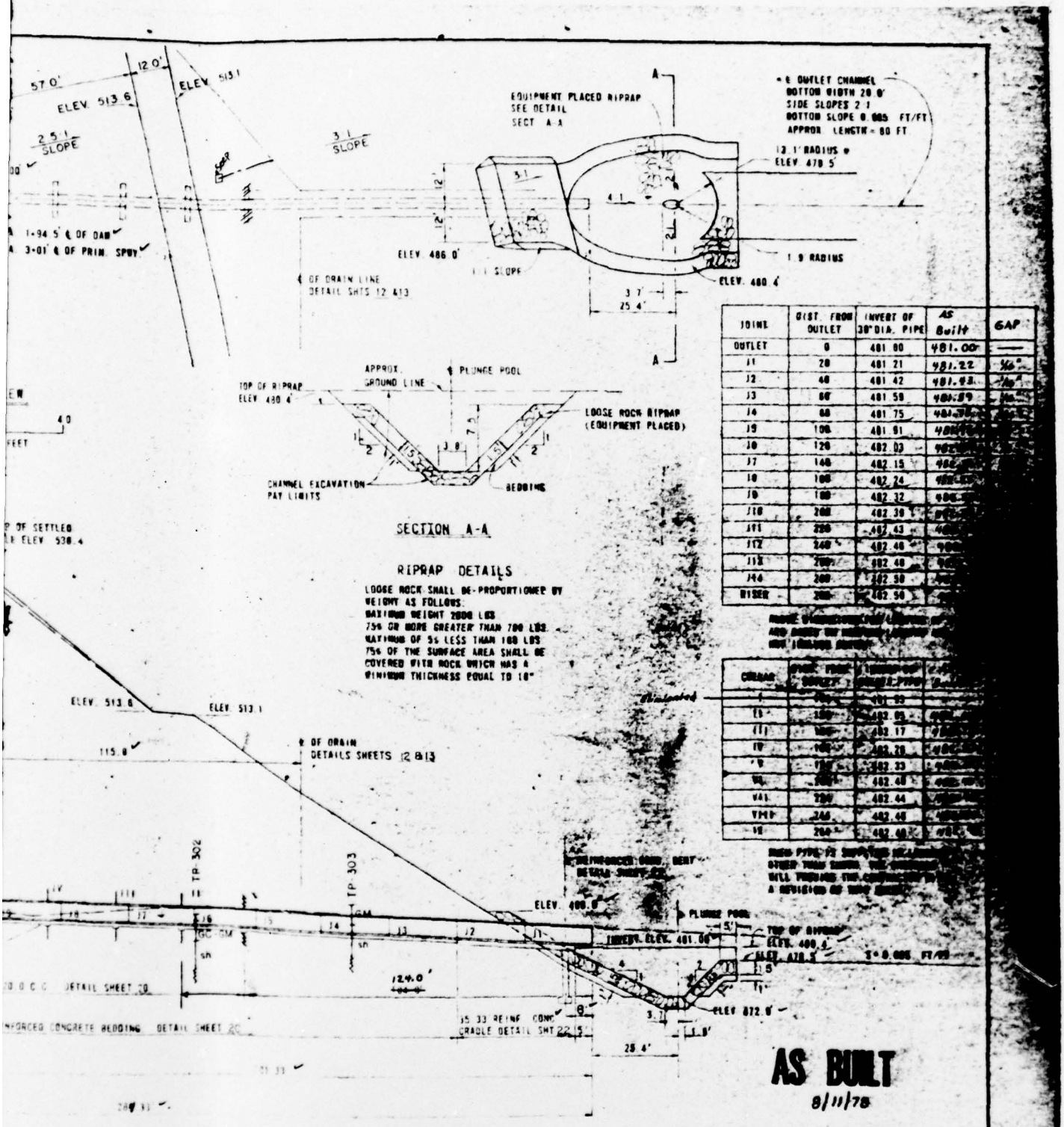
HIGINBOTHAM BROOK
WATERSHED PROJECT
FLOODWATER RETARDING DAM
MADISON COUNTY NEW YORK
DRAINAGE SYSTEM

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed	W. A. RIEGEL	8-75	Approved by
Drawn	R. J. KELLEY	8-75	Title
Traced			Date
Checked	D. E. W.		Sheet No. NY-2594-P

2


ELEV. 513.6
10.0'
79.8'
3.5:1 SLOPE
18.0'
57.0'
12.0'
2.5:1 SLOPE
105.00'
℄ PRINCIPAL SPILLWAY
STA. 1+94.5 ℄ OF DAM
STA. 3+01' ℄ OF PRIN. SPWY.
℄ DAM
33' OF REINFORCED CONCRETE PIPE 18" DIA. DETAIL SHEET 22
PLAN VIEW
SCALE IN FEET
℄ OF INLET CHANNEL
BOTTOM WIDTH = 10'
SIDE SLOPES 2:1
BOTTOM SLOPE = 0.04 FT/FT
APPROX. LENGTH 100' FT
ORIGINAL GROUND SURFACE AND CHANNEL CONFIGURATIONS GIVEN SHALL BE THE BASIS FOR DETERMINING THE PAY QUANTITIES FOR CHANNEL EXCAVATION
TOP OF CONSTRUCTED FILL DETAILS SHEET 8
℄ OF DAM
TOP OF SETTLED FILL ELEV. 538.4
℄ OF PIPE SLEEVE AND STEM DETAILS SHEET 15
RISER CREST ELEV. 528.09
REINFORCED CONC. RISER DETAILS SHEET 15
ORIFICE CREST ELEV. 513.10
ELEV. 513.6
115.0'
RESERVOIR DRAIN INVERT ELEV. 485.50
RISER FLOOR ELEV. 482.50
REINFORCED CONCRETE RESERVOIR DRAIN DETAIL SHEET 22
33°45' ELBOW
RESERVOIR DRAIN INVERT ELEV. 486.40
RESERVOIR DRAIN CONCRETE BEDDING DETAIL SHT 21
CONCRETE BEDDING ON RISER FLOOR DETAIL SHEET 21
TP-304
TP-305
TP-306
TP-301
TP-302
℄ REINFORCED CONCRETE ANTI-SEEP COLLARS @ 20.0 C.C. DETAIL SHEET 20
243.00' NON REINFORCED CONCRETE BEDDING DETAIL SHEET 21
PROFILE ALONG ℄ OF PRINCIPAL SPILLWAY
HORIZ. SCALE IN FEET
VERT. SCALE IN FEET



JOINT	DIST. FROM OUTLET	INVERT OF 30" DIA. PIPE	AS Built	GAP
OUTLET	0	481.00	481.00	—
J1	20	481.21	481.22	1/16"
J2	40	481.42	481.43	1/16"
J3	60	481.59	481.59	1/16"
J4	80	481.75	481.76	1/16"
J9	100	481.91	481.91	1/16"
J10	120	482.03	482.03	1/16"
J7	140	482.15	482.15	1/16"
J8	160	482.24	482.24	1/16"
J6	180	482.32	482.32	1/16"
J10	200	482.38	482.38	1/16"
J11	220	482.43	482.43	1/16"
J12	240	482.48	482.48	1/16"
J13	260	482.48	482.48	1/16"
J14	280	482.50	482.50	1/16"
RISER	288	482.50	482.50	1/16"

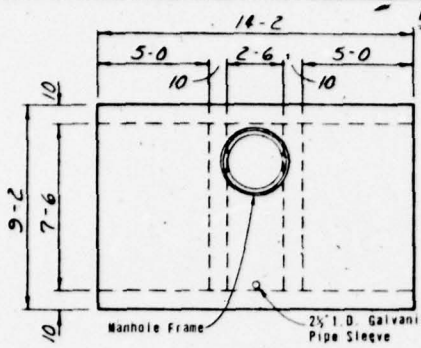
CRADLE	DIST. FROM OUTLET	INVERT OF CRADLE PIPE	AS Built
1	300	481.95	481.95
2	320	482.05	482.05
3	340	482.17	482.17
4	360	482.28	482.28
5	380	482.33	482.33
6	400	482.48	482.48
VA1	420	482.44	482.44
VM1	440	482.48	482.48
8	460	482.48	482.48

AS BUILT
8/11/78

HIGINBOTHAM BROOK
WATERSHED PROJECT
FLOODWATER RETARDING DAM
MADISON COUNTY NEW YORK
PLAN PROFILE OF PRINCIPAL SPILLWAY
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
W. A. RIEGEL -75
D ANGELO -75
NY-2594-P

SCS ENG. 111 B Rev.

MANHOLE ASSEMBLY DETAIL

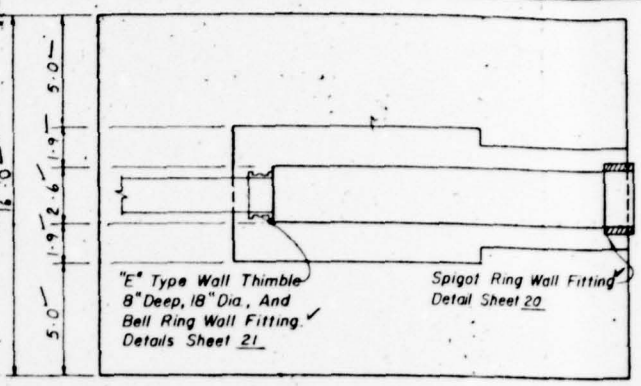


PLAN-TOP

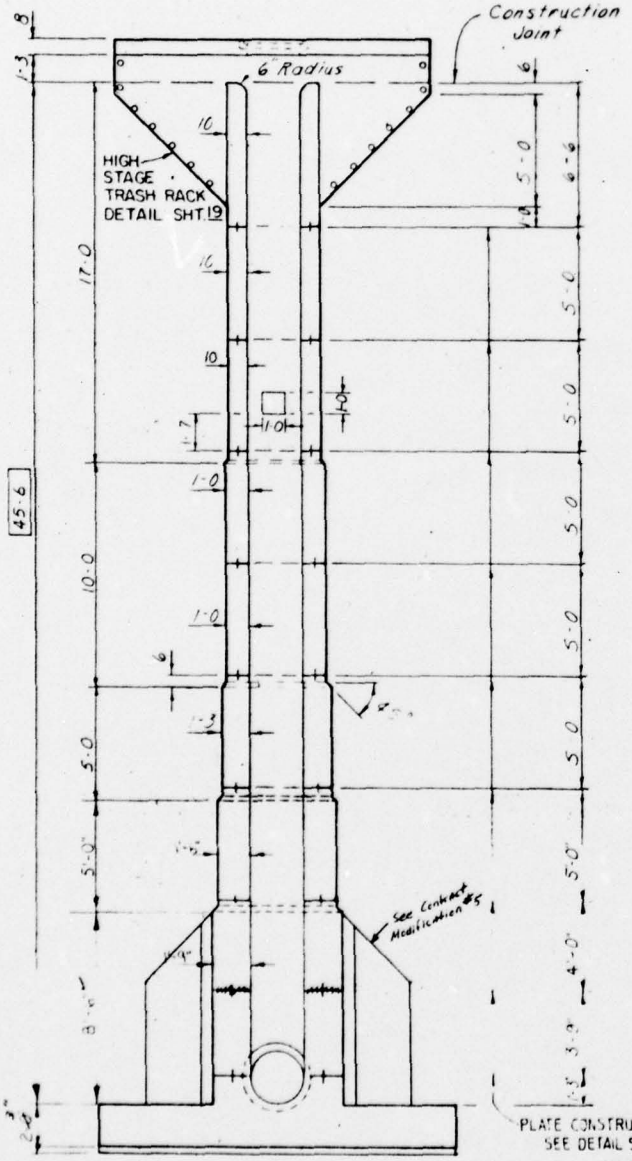
Circular Manhole Assembly Min Clear Opening 30" Neenah Foundry Co. Model R-6461-HH With Stainless Steel Cap Screws, Or Equivalent

The Lifting Device shall consist of a hole approx. 3" from the outside perimeter of the lid.

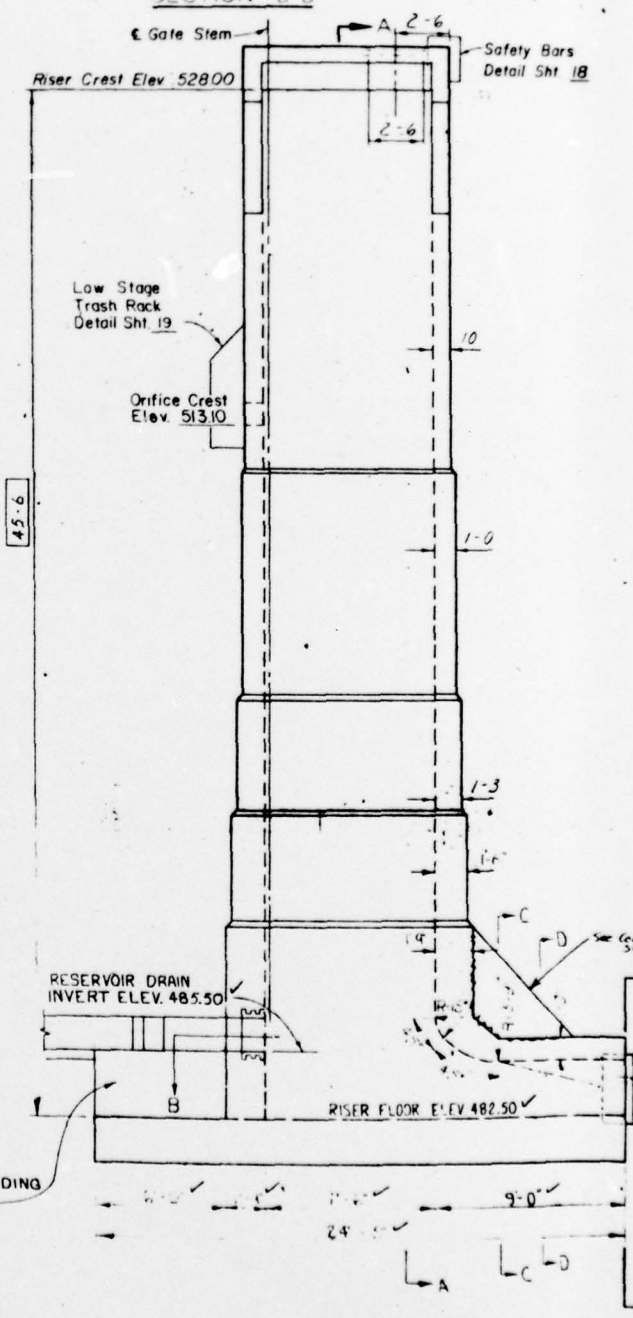
The Locking Device shall consist of a hook at one edge of the lid underside and a rotating bar with a hex bolt at the opposite edge.



SECTION B-B



SECTION A-A



SIDEWALL ELEVATION

STEEL SCHEDULE

Mark	Size	Quantity	Length	Type	B	C	Total Length
R 1	# 7	22	11-8	1			256-8
R 2	# 5	20	8-6	1			170-0
R 3	# 6	10	3-6	1			35-0
R 4	# 7	28	9-6	1			266-0
R 5	# 7	40	9-10	21	3-8	6-2	393-4
R 6	# 5	20	8-6	1			170-0
R 7	# 6	10	3-6	1			35-0
R 8	# 7	26	4-4	1			112-8
R 9	# 6	36	9-3	21	3-4	5-11	333-0
R 10	# 6	4	8-9	21	3-1	5-8	35-0
R 11	# 5	22	11-9	1			258-6
R 12	# 5	20	8-6	1			170-0
R 13	# 5	10	3-6	1			35-0
R 14	# 5	26	9-6	1			247-0
R 15	# 7	40	9-0	21	3-3	5-3	360-0
R 16	# 6	14	8-3	1			115-6
R 17	# 5	10	3-6	1			35-0
R 18	# 5	20	3-8	1			73-4
R 19	# 5	36	8-3	21	2-10½	5-4½	297-0
R 20	# 5	4	8-0	21	2-9	5-3	32-0
R 21	# 5	19	11-9	1			223-3
R 22	# 6	12	8-3	1			99-0
R 23	# 5	8	3-3	1			26-0
R 24	# 5	19	11-9	1			223-3
R 25	# 5	36	8-0	21	2-9	5-3	288-0
R 26	# 5	12	8-3	1			99-0

Mark	Size	Quantity	Length	Type	B	C	Total Length
R 27	# 5	9	3-3	1			29-3
R 28	# 5	32	3-0	21	2-9	5-3	256-0
R 29	# 5	4	5-3	1			21-0
R 30	# 5	4	3-9	1			15-0
T 1	# 5	18	6-0	1			108-0
T 2	# 5	6	8-0	1			48-0
T 3	# 5	4	4-9	1			19-0
T 4	# 5	4	3-6	1			14-0
T 5	# 5	4	2-3	1			9-0
T 6	# 5	4	9-0	19	2-0	7-0	36-0
T 7	# 5	12	8-3	1			99-0
T 8	# 5	2	3-3	1			6-6
T 9	# 5	2	5-9	1			11-6
T 10	# 5	2	10-9	1			21-6
T 11	# 5	2	13-3	1			26-6
T 12	# 5	14	6-3	1			87-6
T 13	# 5	6	8-0	1			48-0
T 14	# 5	4	6-0	1			24-0
T 15	# 5	4	4-9	1			19-0
T 16	# 5	4	3-6	1			14-0
T 17	# 5	4	2-3	1			9-0
T 18	# 5	4	9-0	19	2-0	7-0	36-0
T 19	# 5	24	8-0	21	2-9	5-3	192-0
T 20	# 5	2	3-3	1			6-6
T 21	# 5	2	5-9	1			11-6
T 22	# 5	2	8-3	1			16-6
T 23	# 5	2	10-9	1			21-6
T 24	# 5	2	13-3	1			26-6
T 25	# 5	4	13-9	1			55-0
T 26	# 5	4	13-9	1			55-0
T 27	# 4	14	8-3	1			115-6
T 28	# 6	2	4-9	1			9-6
T 29	# 4	7	13-9	1			96-3
T 30	# 4	4	5-3	1			21-0
T 31	# 5	24	6-9	21	1-6	5-3	162-0
T 32	# 5	2	6-6	21	1-6	5-0	13-0
T 33	# 5	2	2-6	21	1-6	1-0	5-0
T 34	# 4	7	13-9	1			96-3
T 35	# 4	4	5-3	1			21-0

Spigot Ring Wall Fitting
Detail Sheet 20

Safety Bars
Detail Sht 18

ISOMETRIC

SECT. C-C

SECT. D-D

SECT. E-E

BAR TYPES

TYPE 19

TYPE 21

TYPE 19A

TYPE T-1

RISER FLOOR ELEV 482.50

SIDEWALL ELEVATION

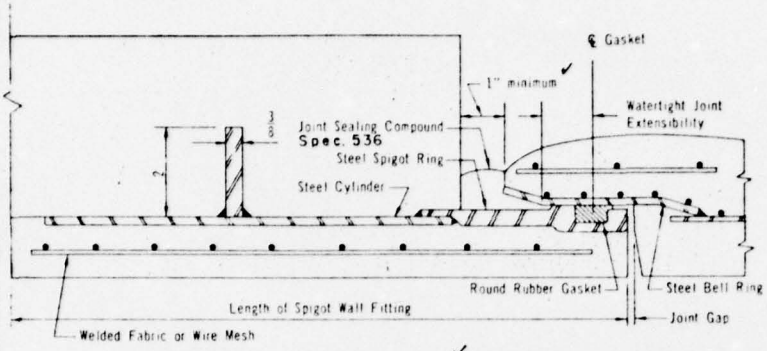
AS BUILT
8/11/78

Scale in Feet

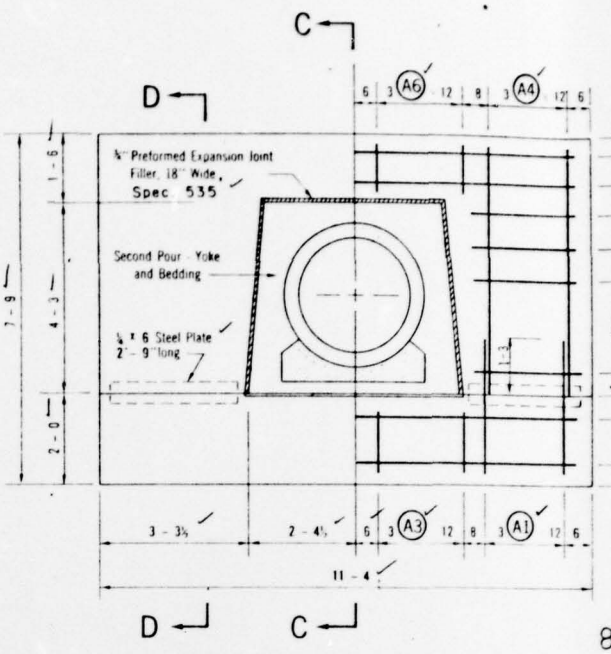
HIGINBOTHAM BROOK WATERSHED PROJECT
FLOODWATER RETARDING DAM
MADISON COUNTY NEW YORK
RISER STRUCTURAL DETAILS

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

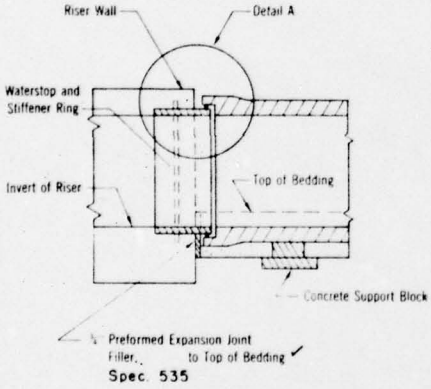
Adapted W A RIEGEL Date 5-75
Drawn
Traced
Checked D E W 5-75
Approved by
Title
Sheet No. 15
Drawing No. NY-2594-P



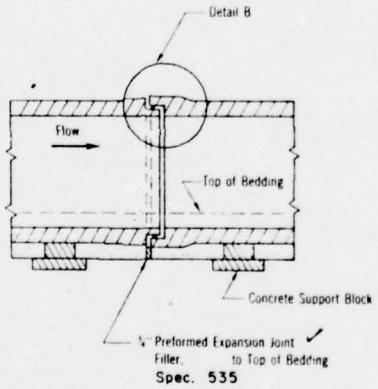
DETAIL A



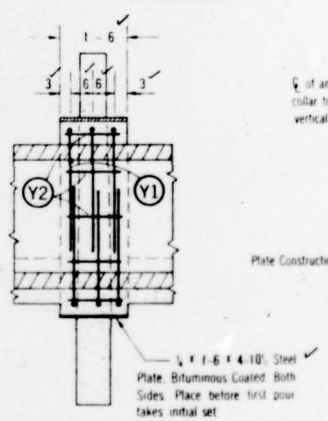
DETAIL OF ANTI-SEEP COLLAR



DETAIL OF SPIGOT WALL FITTING

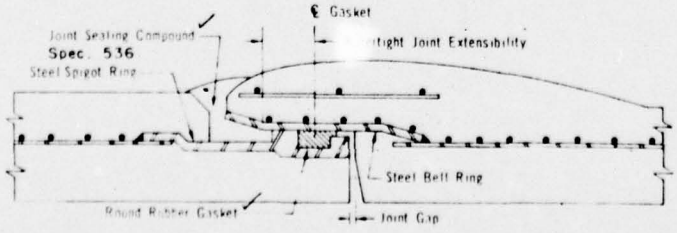


DETAIL OF PIPE JOINT



SECTION C-C

SECTION



DETAIL B

JOINT REQUIREMENTS

No. of pipe section	Length of Pipe Section	Minimum Joint Length	Minimum Joint Limiting Angle	
Ea.	feet	inches	radians	degrees
14	20.0	2 3/4	.008	0° 28'
1	30 (4-0)	2 3/4	.008	0° 28'

Cast outside of spigot ring with concrete on one 20' section.

Supply one spigot ring wall fitting for 12" wall.

For pipe length other than shown, joint requirements will be determined by the Engineer.

Where pipes of different length are connected, adjoining pipes shall meet the requirements of the longer pipe.

Prior to delivery of pipe, the pipe joint detail proposed for use shall be submitted to the Engineer for approval.

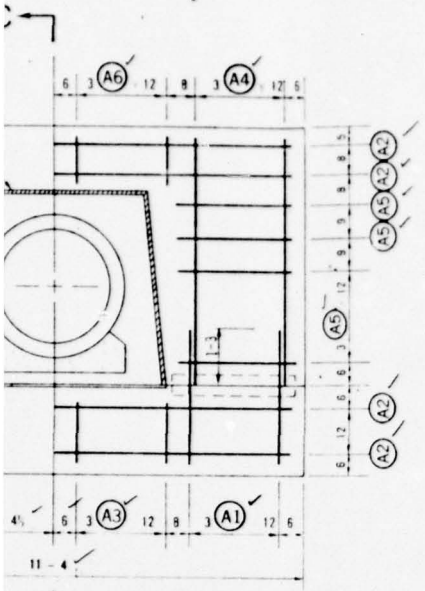
STANDARD CONDUIT DETAILS
FOR
REINFORCED CONCRETE PRESSURE PIPE
PRINCIPAL SPILLWAY

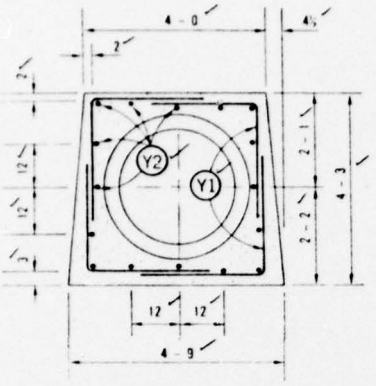
STANDARD DWG. NO. ES 5030-BE

DATE 2/70 | SHEET 1 OF 1

Joint length equals watertight joint extensibility plus joint gap.

The pipe shall be drawn together so that the maximum joint gap does not exceed ½ inch for pipe laid on a straight line. For cambered pipe or pipe laid on a curved line, the joint gap at the closest point shall not exceed ½ inch.





DETAIL OF ANTI-SEEP COLLAR YOKE

STEEL SCHEDULE

Anti-seep Collar and Yoke, 8 Required.

Mark	Size	Quantity per Collar	Length	Type	Total Quantity	Total Length	
A1	4	6	3 - 0	1	~~54~~ 48	~~162 0~~	144-0
A2	4	4	10 - 10	1	~~36~~ 32	~~390 0~~	346-8
A3	4	6	1 - 6	1	~~54~~ 48	~~81 0~~	72-0
A4	4	6	5 - 6	1	~~54~~ 48	~~297 0~~	264-0
A5	4	10	2 - 9	1	~~90~~ 80	~~247 6~~	220-0
A6	4	6	1 - 0	1	~~54~~ 48	~~54 0~~	48-0
Y1	4	12	5 - 2	21	~~108~~ 96	~~558 0~~	496-0
Y2	4	16	1 - 2	1	~~144~~ 128	~~168 0~~	149-4

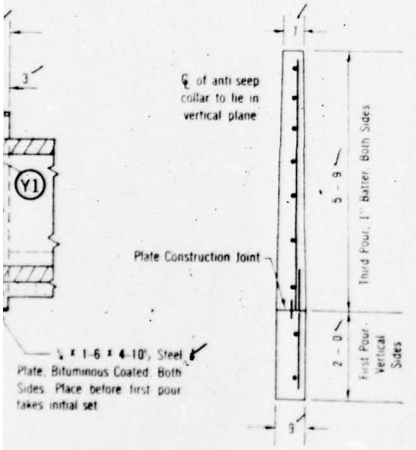
CONSTRUCTION DETAILS SHEET 17

QUANTITIES

Concrete	Cu. Yds.
Anti-seep Collar including Yoke	
* Each,	
Total REINFORCED CONCRETE	~~2.38~~ 2.37 ~~20.9~~ 10.95
Bedding	
** Per Lineal Foot of Bedding	~~0.084~~ .1036
Total NONREINFORCED CONCRETE	~~21.6~~ 23.27
Steel	**Pounds**
Anti-seep Collar including Yoke ~~1950 LE~~ 1,740	~~1308~~ 1,162.3

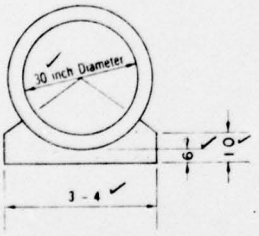
Concrete quantities are based on an outside diameter of pipe ~~of 38.75"~~ 37.50"
Steel quantities do not change with outside diameter of pipe.
~~* This quantity is given by 2.339 - 0.0003830 (D_f - 38) (D_f - 38) cu. yds.~~
~~** This quantity is given by 0.0734 - 0.0005 (D_f - 38) $\left[\frac{0.167\,(3.333)}{27}\right]$ C.Y.~~
D_f = outside diameter of pipe furnished, inches.

ANTI-SEEP COLLAR 8 REQUIRED (SEE SH. 14)
Yoke steel not shown

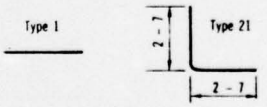


C-C

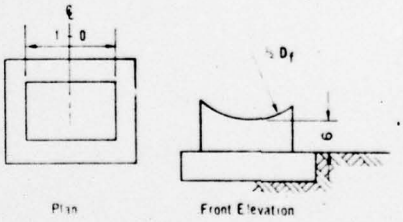
SECTION D-D



DETAIL OF BEDDING



BAR TYPES



SUGGESTED SUPPORT BLOCKS

Sufficient blocks shall be provided to support the pipe to the required line and grade. The Contractor shall determine the number and size of blocks required. Wedges may be used as an alternate.

IREMENTS

un ngth	Minimum Joint Limiting Angle	
s	radians	degrees
/4	008	0° 28'
/4	008	0° 28'

with concrete on one

fitting for 12" wall

joint requirements will be

connected, adjoining s of the longer pipe.

joint detail proposed Engineer for approval.

STRENGTH REQUIREMENTS

Inside Diameter of Pipe	Internal Load: Hydrostatic Pressure	External Load: Minimum 3 Edge Bearing Strength in Pounds per Lineal Foot of Pipe
		Applicable Standard Specification
		AASHTO M-170
	Head of Water	Load to produce 0.001 inch crack one foot long*
inches	feet	
30	52	15,235
		15,700 Test

The outside diameter of pipe assumed in design is 38.75 inches. As A. 14 - ~~37.50"~~

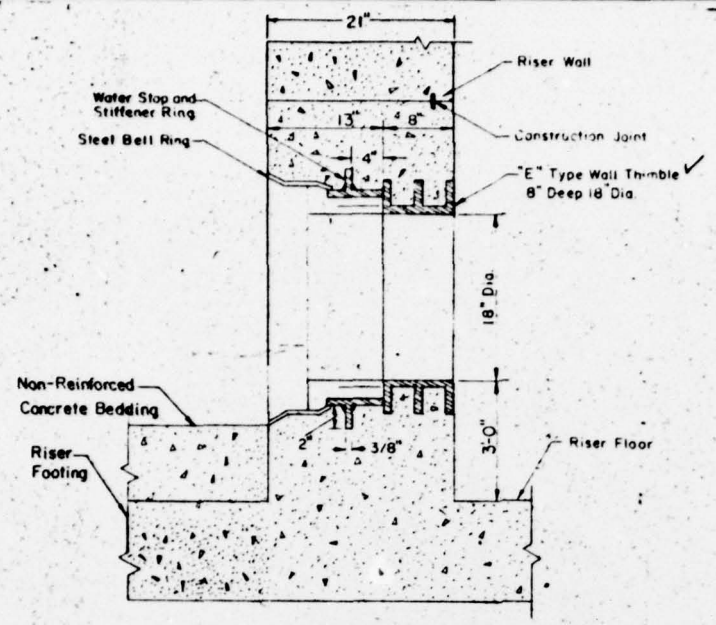
Where the pipe furnished has an outside diameter greater than assumed in design, the three-edge bearing strength of the pipe furnished must not be less than the specified three-edge bearing strength multiplied by the ratio of the outside diameter of the pipe furnished to the outside diameter assumed in design.

AS BUILT
8/11/78

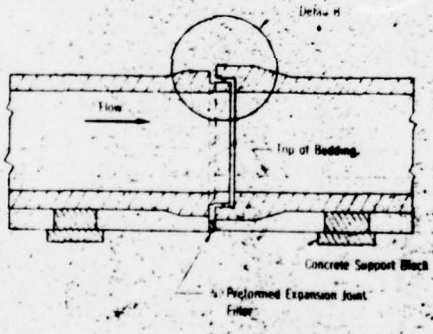
HIGINBOTHAM BROOK
WATERSHED PROJECT
FLOODWATER RETARDING DAM
MADISON COUNTY NEW YORK
PRINCIPAL SPILLWAY CONDUIT DETAILS

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

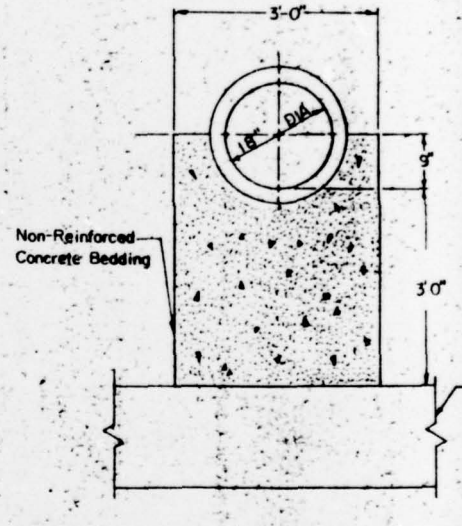
Adapted	W. A. RIEGEL	Date 5-75	Approved by
Drawn			Title
Traced			Title
Checked	D. E. W.	5-75	Sheet No. 20 of 28 sheets; Drawing No. NY-2594-P



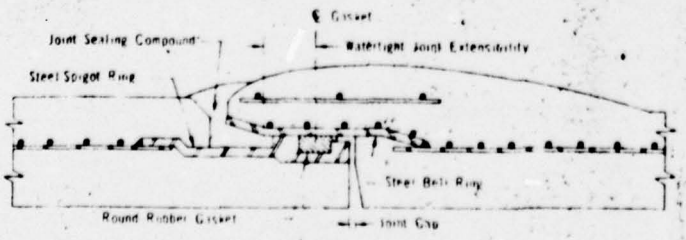
BELL WALL FITTING
("E" Type Wall Thimble)



DETAIL OF PIPE JOINT



RISER FOOTING CONCRETE BE



DETAIL B

JOINT REQUIREMENTS

No. of Pipe Sections Each	Length of Pipe Section feet	Minimum Joint Length in.	Maximum Joint Deflection Limiting Angle radians	degrees
One (1) Bell Wall Fitting For 13" Wall One (1) Spigot Wall Fitting For 8" Wall				
4	20.0 16.0 4.0 ~~12'-0" 5 Piece~~	2 3/4"	.0124	0° 45'

For pipe length other than shown, joint requirements will be determined by the Engineer.

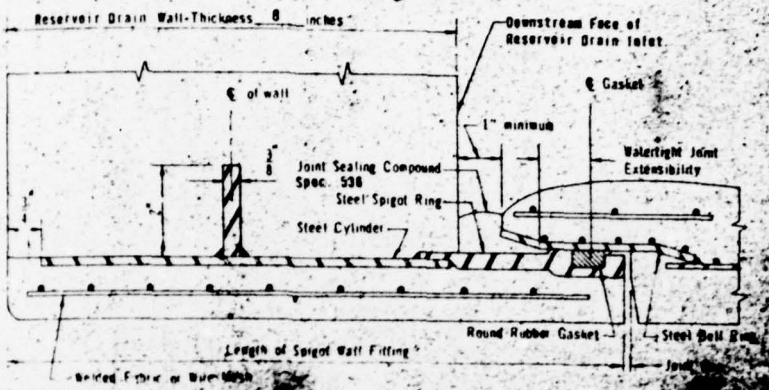
Where pipes of different length are connected, adjoining pipes shall meet the requirements of the longer pipe.

Prior to delivery of pipe, the pipe joint detail proposed for use shall be submitted to the Engineer for approval.

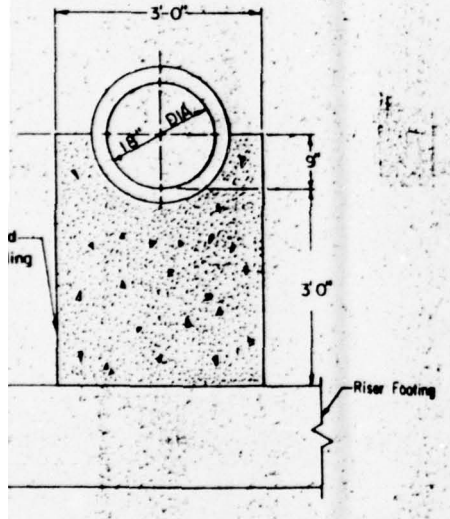
Joint length equals watertight joint extensibility plus joint gap.

The pipe shall be driven together so that the maximum joint gap does not exceed ~~the amount~~ for pipe laid on a straight line. For centered pipe or pipe laid on a curved line, the joint gap at the closest point shall not exceed ~~the~~

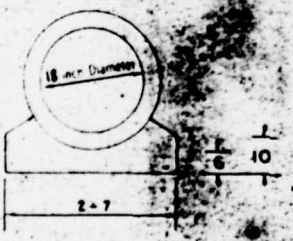
STANDARD CONDUIT DETAILS	
FOR REINFORCED CONCRETE PRESSURE PIPE PRINCIPAL SPILLWAY	
STANDARD DWG. NO. ES-5018-8E	
DATE 2-70	SHEET 1 OF 1



DETAIL OF SPIGOT WALL FITTING AT RESERVOIR DRAIN INLET



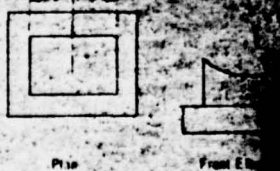
OOTING CONCRETE BEDDING



DETAIL OF BEDDING

QUANTITIES (This Sheet Only)

CONCRETE (Non-Reinf.)



Plan

Front El

EQUIREMENTS

Minimum Joint Length	Maximum Joint Limiting Angle	
inches	inches	degrees
3" Wall		
r.8" Wall		
2 3/4"	.0124	0° 45'

shown, joint requirements will be

engths are connected, adjoining
irements of the longer pipe.

the pipe joint details proposed
t to the Engineer for approval.

STRENGTH REQUIREMENTS

		Minimum 3 Edge Bearing Strength in Pounds per Linear Foot of Pipe	
		Required to Produce 0.01" Crack	Required to Produce Ultimate
18	430	~~511~~ 510 lbs/lin.Ft.	765 lbs/lin.Ft.

The inside diameter of pipe assumed in design is 23.60" where the pipe has a wall has an outside diameter greater than assumed in design the three-edge bearing strength of the pipe furnished must be less than the specified three-edge bearing strength multiplied by the ratio of the outside diameter of the pipe furnished to the outside diameter assumed in design.

SUGGESTED SUPPORT BLOCKS

AS BUILT
8/11/78

Sufficient blocks shall be provided to support the pipe to the required line and grade. The Contractor shall determine the number and size of blocks required. Wedges may be used in an alternate

HIGINBOTHAM BROOK
WATERSHED PROJECT
FLOODWATER RETARDING DAM
MADISON COUNTY NEW YORK
RESERVOIR DRAIN CONDUIT DETAILS
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed	Date	Approved by
W.A. Riegel	5-75	Title
Drawn		Title
Traced		
Checked		
D.E.W.	5-75	Sheet No. 21 of 26 Sheets — Drawing No. NY-2594-P

HIGGINBOTHAM BROOK WATERSHED

TEST PIT LOGS

TP #8, C/L Dam, 4/22/75, AHC, 524.3, Dam 2

0.0 - 0.5 Topsoil, red

0.5 - 3.0 Sand, silty, clayey w/some gravel
Max. size 3"
Approx. 7% gravel, 50% sand, 43% slightly plastic fines
Red; moist; rapidly permeable; loose; homogeneous;
glacial outwash; (SM)

3.0 - 6.0 Vernon shale, red, rippable with backhoe

6.0 + Vernon shale, firm (sh)

TP #9, C/L Dam, 4/22/75, AHC, 533.1, Dam 2

0.0 - 0.5 Topsoil, red

0.5 - 1.5 Sand, silty, clayey w/some gravel
Max. size 3"
Approx. 7% gravel, 50% sand, 43% slightly plastic fines
Red; moist; rapidly permeable; loose; homogeneous;
glacial outwash; (SM)

1.5 - 3.0 Vernon shale, red, easily rippable with backhoe

3.0 + Vernon shale, firm (sh)

TP #10, C/L Dam, 4/21/75, AHC, 524.7, Dam 3

0.0 - 0.5 Topsoil, red

0.5 - 3.0 Sand, silty, clayey w/some gravel
Max. size 3"
Approx. 10% gravel, 47% sand, 43% slightly plastic fines
Red; moist; moderately permeable; loose; homogeneous;
glacial outwash; (SM)

3.0 - 4.0 Vernon shale, red, easily rippable with backhoe

4.0 + Vernon shale, red, firm (sh)

TP #11, C/L Dam, 4/18/75, AHC, 520.5, Dam 3

0.0 - 2.0 Sand, clayey, w/silt and gravel
Max. size 3"
Approx. 5% gravel, 55% sand, 45% nonplastic fines
Red; moist; moderately permeable; loose; homogeneous;
glacial outwash; (SM)

2.0 - 12.0 Clay, silty, w/some gravel and occasional subrounded sandstone boulders to 10"
Approx. 10% +6", 8% 3"-6", 84% matrix (which is approx. 4% gravel, 16% sand, 80% moderately plastic fines)
(LL = 22, PI = 7)
Red; moist; very slowly permeable; very dense; homogeneous; lacustrine; (CL-ML) D.S. 11.1, CL-ML

TP #12, C/L Dam, 4/21/75, AHC, 533.3, Dam 3

0.0 - 0.5 Topsoil and forest duff

0.5 - 3.0 Sand, silty, w/some gravel
Max. size 3"
Approx. 5% gravel, 55% sand, 40% nonplastic fines
Brown; moist; rapidly permeable; loose; homogeneous;
(SM) D.S. 12.1, SM

3.0 - 12.0 Gravel, silty, clayey
Approx. 5% +6", 5% 3"-6", 90% < 3" (which is approx. 60% gravel, 28% sand, 12% slightly plastic fines)
(LL = 22, PI = 5)
Brown; moist to saturated; rapidly permeable; loose; alluvial; (GC-GM); D.S. 12.2 - 12.3 GC-GM, GP

NOTE: Water level @ 10'; caved badly below 6'.

TP #124, Borrow Area, 4/22/75, AHC, 549.7

0.0 - 0.5 Topsoil, brown

0.5 - 2.0 Silt, sandy, w/some gravel
95% < 3" (which is approx. 5% gravel, 10% sand, 85% slightly plastic fines)
Brown; moist; moderately permeable; loose; homogeneous; lacustrine; (ML)

2.0 - 3.5 Gravel, silty, w/occasional boulders subangular to angular sandstone and shale to 10".
Approx. 5% +6", 5% 3"-6", 90% < 3" (which is approx. 54% gravel, 36% sand, 10% moderately plastic fines)
Brown; moist; rapidly permeable; loose; alluvial; (GC-GM)

3.5 - 10.0 Sand, silty, w/some gravel
100% < 3" (which is approx. 4% gravel, 61% sand, 35% nonplastic fines)
Brown; moist; moderately permeable; loose; lacustrine; (SM) D.S. 125.1 SM

TP #126, Borrow Area, 4/22/75, AHC, 552.6

0.0 - 0.5 Topsoil, brown

0.5 - 11.0 Gravel, silty, clayey
Some subangular to angular sandstone and shale to 10"
Approx. 5% +6", 5% 3"-6", 90% < 3" (which is approx. 45% gravel, 42% sand, 13% moderately plastic fines)
(LL = 28, PI = 6)
Mottled gray-brown; moist; rapidly permeable; loose; generally homogeneous with less fine fraction found in lower portion; caves quite badly; (GM) D.S. 126.1 GC-GM

TP #127, Borrow Area, 4/22/75, AHC, 550.3

0.0 - 0.5 Topsoil, brown

0.5 - 3.0 Silt, sandy, w/some gravel
95% < 3" (which is approx. 5% gravel, 10% sand, 85% slightly plastic fines)
Brown; moist; moderately permeable; loose; homogeneous; lacustrine; (ML)

3.0 - 11.0 Silt w/sand; 100% < 3"
Approx. 25% sand, 75% nonplastic fines
Brown; moist; moderately permeable; loose; homogeneous; lacustrine; (ML) D.S. 127.1 ML

TP #203, Emergency Spillway, 4/22/75, AHC, 540.2

0.0 - 0.5 Topsoil, red

0.5 - 2.0 Sand, silty, clayey, w/some gravel; 100% < 3"
Approx. 16% gravel, 40% sand, 44% moderately plastic fines
Red; moist; moderately permeable; loose; homogeneous; outwash (SM)

2.0 - 11.0 Gravel, silty, clayey, some subangular to angular sandstone and shale to 10"
Approx. 5% +6", 5% 3"-6", 90% < 3" (which is approx. 45% gravel, 42% sand, 13% moderately plastic fines)
Brown; moist; rapidly permeable; loose; generally homogenous with siltier layer at 8'-outwash; (GC-GM)

TP #204, Emergency Spillway, 4/22/75, AHC, 526.3

0.0 - 0.5 Topsoil, red

0.5 - 2.0 Sand, silty, clayey, w/some gravel
100% < 3" (which is approx. 16% gravel, 40% sand, 44% moderately plastic fines) (LL = 25, PI = 5)
Red; moist; moderately permeable; loose; homogenous; outwash; (SM) D.S. 204.1 SM

2.0 - 10.0 Gravel, silty, clayey, some subangular to angular sandstone and shale to 10"
Approx. 5% +6", 5% 3"-6", 90% < 3" (which is approx. 45% gravel, 42% sand, 13% moderately plastic fines)
Brown; moist; rapidly permeable; loose; generally homogenous with siltier layer at 8'-outwash; (GC-GM)

TP #205, Emergency Spillway, 4/22/75, AHC, 531.8

0.0 - 0.5 Topsoil, red

0.5 - 2.0 Sand, silty, clayey, w/some gravel; 100% < 3"
Approx. 16% gravel, 40% sand, 44% moderately plastic fines
Red; moist; moderately permeable; loose; homogenous; outwash (SM)

2.0 - 10.0 Gravel, silty, clayey
Some subangular to angular sandstone and shale boulders to 10"
Approx. 5% +6", 5% 3"-6", 90% < 3" (which is approx. 45% gravel, 42% sand, 13% moderately plastic fines)
Brown; moist; rapidly permeable; loose; homogenous; outwash; (GM)

TP #201, Principal Spillw

0.0 - 0.5 Topsoil, fo

0.5 - 3.7 Gravel, sil
sandstone
Approx. 5%
5% gravel,
Red-brown;
loose; allu

3.7 + Bedrock, Ve
where satur

NOTE: Test
abut
bedr
7.0'

TP #202, Principal Spillw

0.0 - 1.0 Topsoil, fo
trash

1.0 - 4.0 Gravel, sil
sandstone
Approx. 5%
55% gravel
(LL = 30,
Red-brown;
loose; all

4.0 + Bedrock, Ve
removed wit
where satur

NOTE: Test
abut
vari
at t

TP #203, Principal Spillw

0.0 - 3.0 Gravel, sil
sandstone
Approx. 5%
5% gravel,
Red-brown;
loose; allu

3.0 + Bedrock, Ve
easily remo

TP #204, Principal Spillw

0.0 - 1.0 Topsoil, fo

1.0 - 4.0 Gravel, sil
sandstone
Approx. 5%
5% gravel,
Red-brown;
loose; allu

4.0 + Bedrock, Ve

TP #205, Principal Spillw

0.0 - 1.0 Topsoil, fo

1.0 - 4.0 Gravel, sil
sandstone
Approx. 5%
5% gravel,
Red-brown;
loose; allu

4.0 + Bedrock, Ve
easily rem

TP #206, Principal Spillw

0.0 - 1.0 Streamed

1.0 + Bedrock, Ve
depth with

TP #301, Drain line, 4/

0.0 - 2.0 Gravel, sil
Approx. 5%
5% gravel,
Red-brown;
(GC-GM)

2.0 + Bedrock, Ve
removed wit

NOTE: TP

TP #302, Drain line, 4/

0.0 + Bedrock, Ve
easily rem

NOTE: TP

TP #301, Principal Spillway, 4/23/75, AHC, 486.0 ±

0.0 – 0.5 Topsoil, forest duff and floodplain trash

0.5 – 3.7 Gravel, silty, clayey, w/some subangular to angular sandstone and shale boulders to 10".
Approx. 5% +6", 5% 3"–6", 90% < 3" (which is approx. 50% gravel, 38% sand, 12% moderately plastic fines)
Red-brown; moist to saturated; rapidly permeable; loose; alluvial; (GM)

3.7 + Bedrock, Vernon shale, badly weathered near stream where saturated (sh)

NOTE: Test pit was a trench from the base of the abutment to the stream edge. Depth to firm bedrock varies from 3.7' near abutment to 7.0' at the stream edge.

TP #302, Principal Spillway, 4/23/75, AHC, 485.0 ±

0.0 – 1.0 Topsoil, forest duff, weathered shale and floodplain trash

1.0 – 4.0 Gravel, silty, clayey, w/some subangular to angular sandstone and shale boulders to 10"
Approx. 5% +6", 5% 3"–6", 90% < 3" (which is approx. 55% gravel, 33% sand, 12% moderately plastic fines)
(LL = 30, PI = 9)
Red-brown; moist to saturated, rapidly permeable; loose; alluvial; (GM) D.S. 302.1 GC-GM

4.0 + Bedrock, Vernon shale, badly weathered and easily removed with backhoe to depth of 8', near stream where saturated (sh)

NOTE: Test pit was a trench from base of the abutment to stream edge. Depth to firm bedrock varied from 4' at base of abutment to 8.0' at the stream edge.

TP #303, Principal Spillway, 4/23/75, AHC, 483.0 ±

0.0 – 3.0 Gravel, silty, clayey, w/some subangular to angular sandstone and shale boulders to 10".
Approx. 5% +6", 5% 3"–6", 90% < 3" (which is approx. 50% gravel, 38% sand, 12% moderately plastic fines)
Red-brown; moist to saturated; rapidly permeable; loose; alluvial; (GM)

3.0 + Bedrock, Vernon shale, top 5.0' badly weathered and easily removed with backhoe (sh)

TP #304, Principal Spillway, 4/23/75, AHC, 486.0 ±

0.0 – 1.0 Topsoil, forest duff and floodplain trash

1.0 – 4.0 Gravel, silty, clayey, w/some subangular to angular sandstone and shale to 10"
Approx. 5% +6", 5% 3"–6", 90% < 3" (which is approx. 50% gravel, 38% sand, 12% moderately plastic fines)
Red-brown; moist to saturated; rapidly permeable; loose; alluvial; (GM)

4.0 + Bedrock, Vernon shale, weathered on top 18" (sh)

TP #305, Principal Spillway 4/23/75, AHC, 485.0 ±

0.0 – 1.0 Topsoil, forest duff and floodplain trash

1.0 – 4.0 Gravel, silty, clayey, w/some subangular to angular sandstone and shale to 10"
Approx. 5% +6", 5% 3"–6", 90% < 3" (which is approx. 50% gravel, 38% sand, 12% moderately plastic fines)
Red-brown; moist to saturated; rapidly permeable; loose; alluvial; (GM)

4.0 + Bedrock, Vernon shale, top 9 badly weathered and easily removed with backhoe

TP #306, Principal Spillway, 4/23/75, AHC, 484.0 ±

0.0 – 1.0 Streamed deposit, gravel and shale

1.0 + Bedrock, Vernon shale, badly weathered (dug to 8' depth without hitting firm bedrock) (sh)

TP #501, Drain Line, 4/22/75, AHC, 500.0 ±

0.0 – 2.0 Gravel, silty, clayey, mixed with forest duff
Approx. 5% +6", 5% 3"–6", 90% < 3" (which is approx. 50% gravel, 38% sand, 12% moderately plastic fines)
Red-brown; moist; rapidly permeable; loose; alluvial; (GC-GM)

2.0 + Bedrock, Vernon shale, top 1.0' weathered and easily removed with backhoe (sh)

NOTE: TP extended up right abutment approx. 15.0'.

TP #502, Drain Line, 4/22/75, AHC, 495.0 ±

0.0 + Bedrock, Vernon shale, top 1.0' badly weathered and easily removed with backhoe (sh)

NOTE: TP extended up right abutment approx. 15.0'.

TP #501, Diversion, 4/21/75, AHC, 519.0

0.0 – 1.0 Topsoil, brown

1.0 – 3.0 Sand, silty, w/some gravel, 100% < 3"
Approx. 10% gravel, 50% sand, 40% moderately plastic fines
Brown; wet; moderately permeable; loose; homogeneous; alluvial; (SM)

3.0 – 7.0 Silt w/sand and gravel
Max. size 3/8"
Approx. 5% gravel, 10% sand, 85% nonplastic fines
Red; wet; slowly permeable; loose; homogeneous; lacustrine; (ML)

7.0 – 9.0 Sand gravelly with some silt and clay; 100% < 3"
Approx. 39% gravel, 46% sand, 15% moderately plastic fines
Red; wet; rapidly permeable; loose; (dense at 9.0'); homogeneous; alluvial; (SM)

NOTE: Water table @ 3.0'. Logs and floodplain trash at 8.0'

TP #502, Diversion, 4/21/75, AHC, 518.6

0.0 – 3.0 Sand, silty, w/some gravel, 100% < 3"
Approx. 10% gravel, 50% sand, 40% moderately plastic fines
Brown; wet; moderately permeable; loose; homogeneous; alluvial; (SM)

3.0 – 10.0 Silt w/sand; 100% < 3"
Approx. 30% sand, 70% nonplastic fines
Brown; saturated; moderately permeable; loose; lacustrine; (ML) D.S. 602.1, 602.2 ML

10.0 – 11.0 Clay w/silt; 100% < 3"
Approx. 8% gravel, 11% sand, 81% moderately plastic fines
Red; saturated; very slowly permeable; very dense; varved; lacustrine; (CL-ML) D.S. 602.3 CL-ML

11.0 + Bedrock, Vernon shale, firm

NOTE: Water level at 3.0'. Caves badly from 3.0' to 8.0'.

TP #503, Diversion, 4/21/75, AHC, 519.1

0.0 – 2.0 Silt clayey with some sand and gravel; 100% < 3" (which is approx. 4% gravel, 36% sand, 60% plastic fines) (LL = 40, PI = 13)
Red; moist; slowly permeable; soft; homogeneous; lacustrine; (ML) D.S. 603.1 CL-ML

2.0 – 4.0 Sand, gravelly w/some silt and clay; 100% < 3"
Approx. 39% gravel, 46% sand, 15% moderately plastic fines (LL = 28, PI = 9)
Red; wet; rapidly permeable; loose; homogeneous; alluvial; (SM) D.S. 603.2, SM

4.0 – 5.0 Silt w/sand; 100% < 3"
Approx. 30% sand, 70% nonplastic fines
Brown; saturated; moderately permeable; loose; lacustrine; (ML)

5.0 – 6.0 Silt w/sand and gravel
Max. size 3/8"
Approx. 5% gravel, 10% sand, 85% nonplastic fines
Red; wet; slowly permeable; loose; homogeneous; lacustrine; (ML)

NOTE: Water level @ 4', floodplain trash throughout pit, caved badly.

TP #504, Diversion, 4/21/75, AHC, 522.5

0.0 – 0.5 Topsoil, red

0.5 – 3.0 Silt w/ sand and gravel
Max. size 3/8"
Approx. 5% gravel, 10% sand, 85% nonplastic fines
Red; wet; slowly permeable; loose; homogeneous; lacustrine; (ML)

3.0 – 11.0 Silt and clay w/some sand and gravel
Approx. 5% +6", 10% 3"–6", 85% < 3" (which is approx. 3% gravel, 22% sand, 75% very slightly plastic fines)
(LL = 18, PI = 1)
Red-brown; with gray layer at 8.0'; saturated; slowly permeable; loose to dense with depth; homogeneous; lacustrine; (ML) D.S. 604.1 ML

AS BUILT
8/11/78

HIGINBOTHAM BROOK
WATERSHED PROJECT
FLOODWATER RETARDING DAM
MADISON COUNTY, NEW YORK
LOGS OF TEST HOLES

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

STATE CONS ENGINEER

DES. DR. N 5-75 SHEET NO. 24 NY-2594-G

SCS-313-C(9-64)

TP #605, Diversion, 4/22/75, AHC, 523.3

0.0 - 0.5 Topsoil, red

0.5 - 10.0 Silt and clay w/some sand and gravel, one 18" boulder at 3.0'
Approx. 5% +6", 10% 3"-6", 85% < 3" (which is approx. 8% gravel, 24% sand, 68% slightly plastic fines
Red-brown; wet to saturated with depth; slowly permeable; loose to dense with depth, homogeneous; lacustrine; (ML)

TP #606, Diversion, 4/22/75, AHC, 523.4

0.0 - 0.5 Topsoil, gray

0.5 - 2.0 Clay w/silt and sand
Approx. 2% sand, 98% moderately plastic fines
Mottled gray-brown; wet; slowly permeable; moderately dense; lacustrine; (CL-ML) D.S. 606.1 CL-ML

2.0 - 11.5 Sand, silty, w/some gravel, 100% < 3"
Approx 4% gravel, 55% sand, 41% nonplastic fines
Brown; moist; moderately permeable; loose; lacustrine; (SM)

NOTE: Change to gray and saturated at 11.0'.

TP #607, Diversion, 4/22/75, AHC, 523.0

0.0 - 0.5 Topsoil, red

0.5 - 9.0 Silt w/ clay and some sand and gravel
Approx. 5% +6", 10% 3"-6", 85% < 3" (which is approx. 8% gravel, 36% sand, 56% slightly plastic fines
Red-brown; moist; moderately permeable; loose to moderately dense; sand layers at 5.0'; (ML)

9.0 - 11.0 Silt w/sand and gravel
Max. size 3/8"
Approx. 5% gravel, 10% sand, 85% nonplastic fines
Red; moist to wet; slowly permeable; loose; homogeneous; lacustrine; (ML) D.S. 607.1 ML

TP #608, Diversion, 4/21/75, AHC, 545.6

0.0 - 0.5 Topsoil, brown

0.5 - 8.0 Clayey silt w/some sand, gravel, and occasional boulders to 10"
Approx. 5% +6", 10% 3"-6", 85% < 3" (which is approx. 11% gravel, 22% sand, 67% moderately plastic fines) (LL = 22, PI = 7)
Brown; moist; slowly permeable; loose; homogeneous; except for occasional sand layers; (ML) D.S. 608.1 CL-ML

8.0 - 12.0 Sand, silty w/some gravel; 100% < 3"
Approx. 3% gravel, 50% sand, 47% nonplastic fines
Brown; moist; moderately permeable; loose with some varved layers of silt; lacustrine; (SM) D.S. 608.2 SM

TP #609, Diversion, 4/21/75, AHC, 545.8

0.0 - 0.5 Topsoil, brown

0.5 - 11.0 Silt and clay w/some sand and gravel, occasional boulders to 8"
Approx. 5% +6", 10% 3"-6", 85% < 3" (which is approx. 2% gravel, 15% sand, 77% moderately plastic fines) (LL = 25, PI = 7)
Brown; moist; moderately to slowly permeable; loose to dense with depth; homogeneous except for varved layers at 7.0'; lacustrine; (ML) D.S. 609.1 CL-ML

HIGGINBOTHAM BROOK WATERSHED

DRILL HOLE LOGS

DH 51, C/L Dam, 4/18/75, AHC, 539.9, DAM 3

	0.0	
N	0.5	Topsoil
8		Sand, silty, clayey w/some gravel; 100% < 3" Approx. 10% gravel, 45% sand, 45% moderately plastic fines; red; moist; moderately permeable; dense; homogeneous; outwash; (SM)
8	3.0	
28 45 44 39		Gravel, silty clayey, some boulders to 10" Approx. 5% +6", 5% 3"-6", 90% < 3" (which is approx. 45% gravel, 42% sand, 13% moderately plastic fines; brown; moist; rapidly permeable; loose; homogeneous; outwash; (GC-GM)
	12.0	
20		Vernon shale, weathered, red with green layers, interbedded with layers of silt, clay, sand, and gravel (sh)
155/.1' NX	18.0	
		Vernon shale, red, hard, fractured, (sh)
	30.0	

RQD - 0 % , k = .015

DH 52, C/L Dam, 4/17/75, AHC, 525.1, DAM 2

N	0.0	
	0.5	Topsoil, red
8		Sand, silty, clayey w/some gravel Max. size 3" Approx. 7% gravel, 50% sand, 43% slightly plastic fines; red; moist; rapidly permeable; loose; homogeneous; glacial outwash; (SM)
	2.0	
76 120/.5 Aug		Vernon shale, weathered, red, damp (sh)
100/.5' Aug		
100/.1'	15.1	
NX 96 %		Vernon shale, hard, red, fractured (sh) RQD - 16 %
	21.1	

DH 53, C/L Dam, 4/16/75, AHC, 516.6, DAM 3

N	0.0	
		Topsoil, red
	0.5	
5		Sand, silty, clayey w/some gravel Max. size 3" Approx. 10% gravel, 47% sand, 43% slightly plastic fines; red; moist; moderately permeable, loose; homogeneous; glacial outwash; (SM)
	1.5	
		Silt and clay w/some sand and gravel Approx. 5% +6", 10% 3"-6", 85% < 3" (which is approx. 4% gravel, 16% sand, 80% moderately plastic fines; red; moist; very slowly permeable; very dense; homogeneous; lacustrine; (CL-ML)
	2.0	
88 105/.5' Aug		Vernon shale, weathered, red (sh)
	5.0	
100/.1' NX		Vernon shale, hard, red (sh)
		Water level at 3.6'
	15.6	RQD - 15 %

DH 251, Emergency Spillway, 4/17/75, AHC, 538.5

N	0.0	
		Topsoil, red
	0.5	
9		Sand, silty, clayey, w/some gravel; 100% < 3" Approx. 16% gravel, 40% sand, 44% moderately plastic fines; red; moist; moderately permeable; loose; homogeneous; outwash (SC-SM)
11	3.0	
21 20		Gravel, silty, clayey, some subangular to angular sandstone and shale to 10" Approx. 5% +6", 5% 3"-6", 90% < 3" (which is approx. 45% gravel, 42% sand, 13% moderately plastic fines); brown; moist; rapidly permeable; loose; generally homogeneous with siltier layer at 8'-outwash; (GC-GM)
	9.0	
30 102		Vernon shale, weathered, red (sh)
	12.0	

DH 651, Diversion, 4/16/75, AHC, 533.4

N	0.0	
	0.5	Topsoil, brown
4 11		Silt w/sand and gravel Max. size 3/8" Approx. 5% gravel, 10% sand, 85% nonplastic fines; red; wet; slowly permeable; loose; homogeneous; lacustrine; (ML)
	3.5	
20 31 23 16 15 9		Silt and clay w/some sand and gravel Approx. 5% +6", 10% 3"-6", 85% < 3" (which is approx. 4% gravel, 24% sand, 68% slightly plastic fines); red-brown; wet to saturated with depth; slowly permeable; loose to dense with depth; homogeneous; lacustrine; (ML)

DH 651 (continued)

12	18.0	

DH 652, Diversion, 4/1

N	0.0	
	0.5	To
6		Cl
12		Ap
6		ap
19		pl
19		mo
		sa
25	12.0	
		Sa
37		Ap
14		fi
		mo
		si
	17.0	
		Cl
16		Ap
13		ap
		pl
		mo
		sa
18	21.0	

DH 651 (continued)

N	
12	18.0

DH 652, Diversion, 4/17/75, AHC, 536-A

N	
	0.0
	0.5 Topsoil, brown
6 12 6 19 19	Clayey silt w/some sand and gravel layers Approx. 5% +6", 10% 3"-6", 85% < 3" (which is approx 11% gravel, 22% sand, 67% moderately plastic fines); brown; moist; slowly permeable; medium dense; homogeneous except for occasional sand-gravelly layers; (CL-ML)
25	12.0
37 14	Sand, silty w/some gravel, 100% < 3" Approx. 3% gravel, 50% sand, 47% nonplastic fines; brown; moist; moderately permeable; moderately dense with some varved layers of silt; lacustrine; (SM)
	17.0
16 13	Clayey silt w/some sand and gravel layers Approx. 5% +6", 10% 3"-6", 85% < 3" (which is approx. 11% gravel, 22% sand, 67% moderately plastic fines); brown; moist; slowly permeable; medium dense; homogeneous except for occasional sand-gravelly layers; (CL-ML)
18	21.0

LEGEND

TEST HOLE NUMBERING SYSTEM

	Test Pit (TP)	Drill Hole (DH)
Centerline of Dam	1-49	51-99
Borrow Area	101-149	151-199
Emergency Spillway	201-249	251-299
Principal Spillway	301-349	351-399
Outlet Channel	401-449	451-499
Drain Line	501-549	551-599
Other	601-649	651-699

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS) SYMBOLS

GW	Well graded gravels; gravel-sand mixtures
GP	Poorly graded gravels
GM	Silty gravels; gravel-sand-silt mixtures
GC	Clayey gravels; gravel-sand-clay mixtures
SW	Well graded sands; sand-gravel mixture
SP	Poorly graded sands
SM	Silty sands; sand-silt mixtures
SC	Clayey sands; sand-clay mixtures
ML	Silts; silty, very fine sands; sandy or clayey silts
CL	Clays of low to medium plasticity; silty, sandy, or gravelly clays
OL	Organic silts and organic silty clays of low plasticity
MH	Elastic silts; micaceous or diatomaceous silts
CH	Clays of high plasticity; fat clays
OH	Organic silts or clays of medium to high plasticity
Pt	Peat; muck
(xx)	Unified Classification by Visual-Manual Procedure (ASTM D2488) in the field
xx	Unified Classification based on laboratory analysis of representative samples (ASTM D2487)

BACKHOE PIT AND DRILL HOLE LOG TERMS AND ABBREVIATIONS

Sample types - DS - Disturbed sample (loose, bagged, mixed)
- US - Undisturbed sample (sealed block or tube type)
Matrix - All material less than 3"
Atterberg limits - (ASTM D424) - LL - Liquid Limit
- PL - Plastic Limit
- PI - Plasticity Index

Bldr - Boulder
Cbl - Cobble
A - Angular
SA - Subangular
SR - Subrounded
R - Rounded
ss - Sandstone
sh - Shale
slst - Siltstone
ls - Limestone
Sed - Sedimentary
- WL - Water Level

O - Seep in test hole
BH - Blind hole - no sample
WOH - Weight of hammer
Ref - Refusal
RX - Rock core 2 1/8" diameter
RB - Roller bit - no sample
AUG - Auger - no sample
DBS - Dry barrel sample
STS - Split tube sample
Rec - Recovery - % of rock or STS recovered
k - Permeability rate (Ft/day)
EOH - End of hole

N - Blows per foot - Standard Penetration Test (ASTM D1586)
RQD - Rock Quality Designation in % - length of core pieces >4"/length of core run

KEY TO BACKHOE PIT LOGS

TP Number, Location, Date, Logged by, Elevation

Depth

Typical name
Maximum size - Lithology
Approx % +6", % 3"-6", % matrix (which is approx % gravel, % sand, % plasticity fines)
Odor; color; moisture; permeability; density or consistency; structure; origin; (field USCS)
Sample number and type: lab USCS

NOTE: Water level, ect.

KEY TO DRILL HOLE LOGS

DH Number, Location, Date, Logged by, Elevation

N

Description of Geologic Horizon

0.0 Depth

Typical name; gradation; Est % gravel, % sand, % fines; plasticity; odor; color; moisture; permeability; density or consistency; structure; origin; (field USCS).
Sample number and type: lab USCS

6.0 Depth

NOTE: Water level, etc.

AS BUILT
8/11/78

HIGINBOTHAM BROOK
WATERSHED PROJECT
FLOODWATER RETARDING DAM
MADISON COUNTY, NEW YORK
LOGS OF TEST HOLES

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Date
Approved by
STATE CONS ENGINEER
D.E.W. 5-75
Sheet No. 25
NY-2594-G

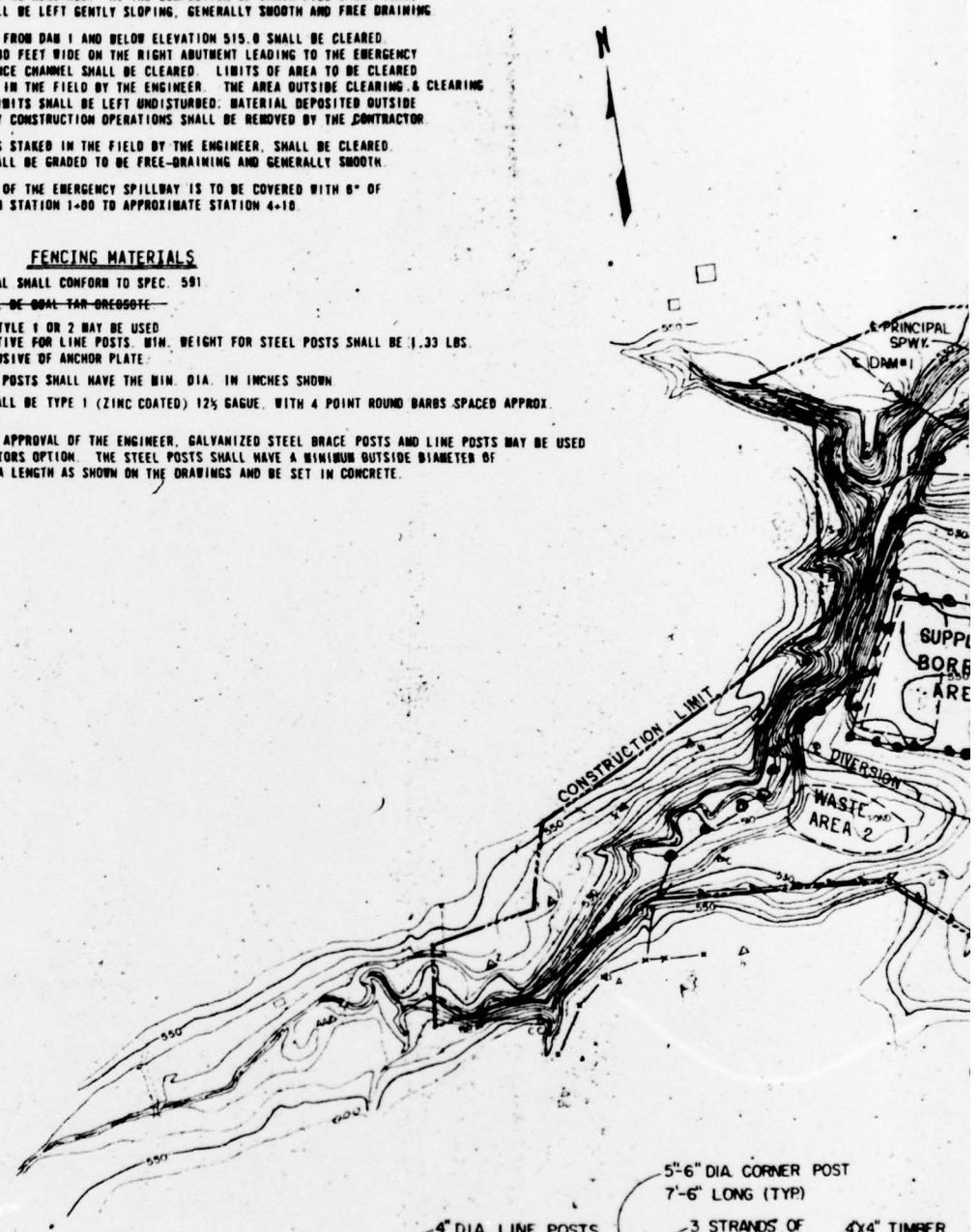
2

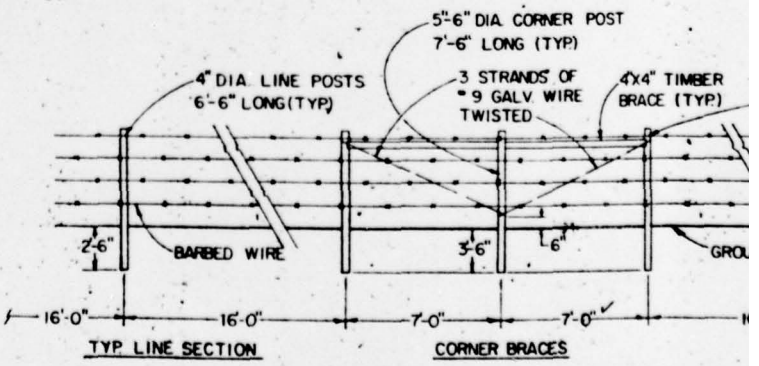
CONSTRUCTION DETAILS

1. AREAS UNDER THE DAMS AND LEVEE (INCLUDING 15 FEET OUTSIDE THE UPSTREAM AND DOWNSTREAM TOES), DIVERSION AND EMERGENCY SPILLWAY (INCLUDING ROCK OUTLET & 15 FEET OUTSIDE THE CUT SLOPES) AND BORROW AREA SHALL BE CLEARED AND GRUBBED. LIMITS OF AREA TO BE CLEARED AND GRUBBED WILL BE STAKED IN THE FIELD BY THE ENGINEER.
2. DEPTHS AND LIMITS OF BORROW EXCAVATION WILL BE DETERMINED IN THE FIELD BY THE ENGINEER AS REQUIRED. AT THE COMPLETION OF EARTH FILL OPERATIONS, THE BORROW SHALL BE LEFT GENTLY SLOPING, GENERALLY SMOOTH AND FREE DRAINING.
3. AREAS UPSTREAM FROM DAM 1 AND BELOW ELEVATION 515.0 SHALL BE CLEARED. THE AREA 80 FEET WIDE ON THE RIGHT ABUTMENT LEADING TO THE EMERGENCY SPILLWAY ENTRANCE CHANNEL SHALL BE CLEARED. LIMITS OF AREA TO BE CLEARED WILL BE STAKED IN THE FIELD BY THE ENGINEER. THE AREA OUTSIDE CLEARING & CLEARING AND GRUBBING LIMITS SHALL BE LEFT UNDISTURBED; MATERIAL DEPOSITED OUTSIDE THESE LIMITS BY CONSTRUCTION OPERATIONS SHALL BE REMOVED BY THE CONTRACTOR.
4. WASTE AREAS, AS STAKED IN THE FIELD BY THE ENGINEER, SHALL BE CLEARED. THESE AREAS SHALL BE GRADED TO BE FREE-DRAINING AND GENERALLY SMOOTH.
5. BOTTOM SECTION OF THE EMERGENCY SPILLWAY IS TO BE COVERED WITH 6" OF OF TOPSOIL FROM STATION 1+00 TO APPROXIMATE STATION 4+10.

FENCING MATERIALS

1. FENCING MATERIAL SHALL CONFORM TO SPEC. 591.
2. ~~TREATMENT SHALL BE COAL TAR CREOSOTE.~~
3. STEEL POSTS, STYLE 1 OR 2 MAY BE USED AS AN ALTERNATIVE FOR LINE POSTS. MIN. WEIGHT FOR STEEL POSTS SHALL BE 1.33 LBS. PER FOOT, EXCLUSIVE OF ANCHOR PLATE.
4. THE TOP OF ALL POSTS SHALL HAVE THE MIN. DIA. IN INCHES SHOWN.
5. BARBED WIRE SHALL BE TYPE 1 (ZINC COATED) 12½ GAGUE, WITH 4 POINT ROUND BARBS SPACED APPROX. 5 INCHES APART.
6. SUBJECT TO THE APPROVAL OF THE ENGINEER, GALVANIZED STEEL BRACE POSTS AND LINE POSTS MAY BE USED AT THE CONTRACTORS OPTION. THE STEEL POSTS SHALL HAVE A MINIMUM OUTSIDE DIAMETER OF 2.375 INCHES, A LENGTH AS SHOWN ON THE DRAWINGS AND BE SET IN CONCRETE.





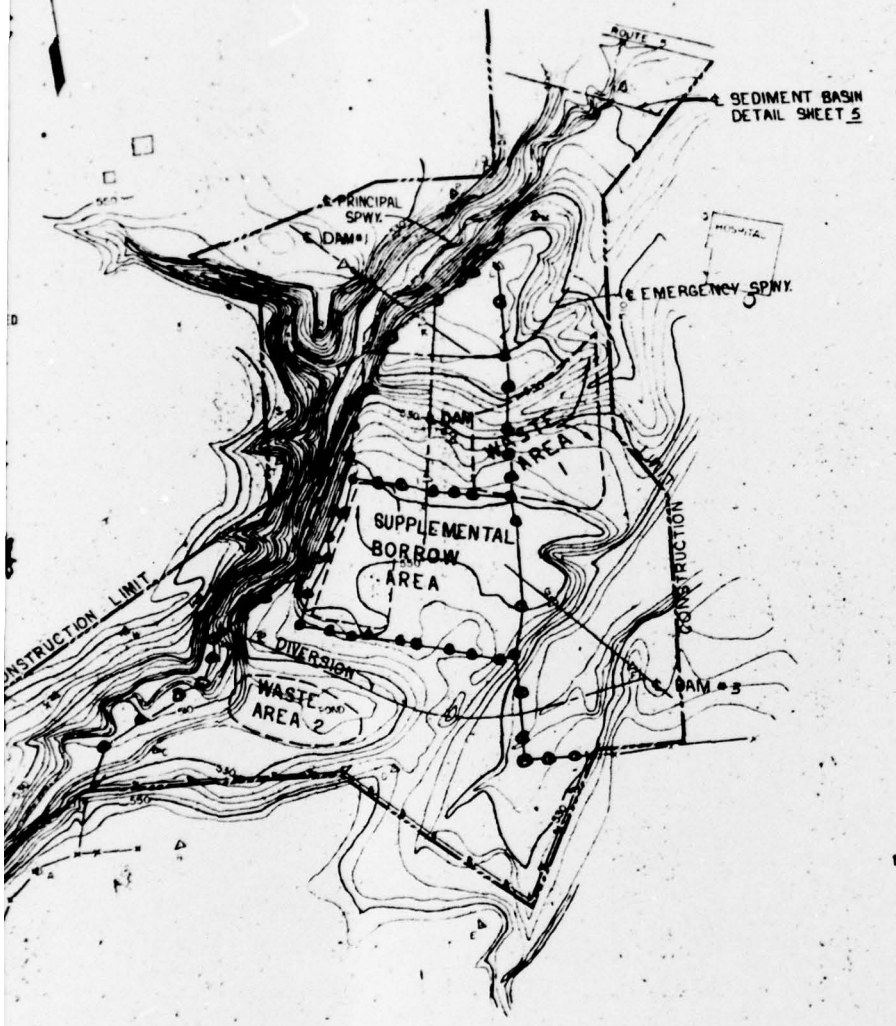
TYP LINE SECTION

CORNER BRACES

DETAIL OF 4-STRAND BARBE

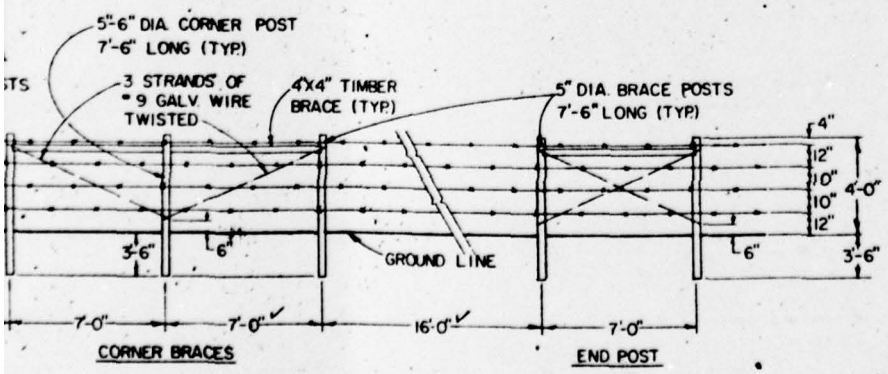
LEGEND

- 510 — CONTOUR
- ℄ STREAM
- SEDIMENT POOL
- DESIGN HIGH WATER
- HUB
- ROAD
- FENCE LINE (EXISTING)
- " " (TO BE INSTALLED)



SCALE IN FEET

CONTOUR INTERVAL = 4'



DETAIL OF 4-STRAND BARBED WIRE FENCE

AS BUILT

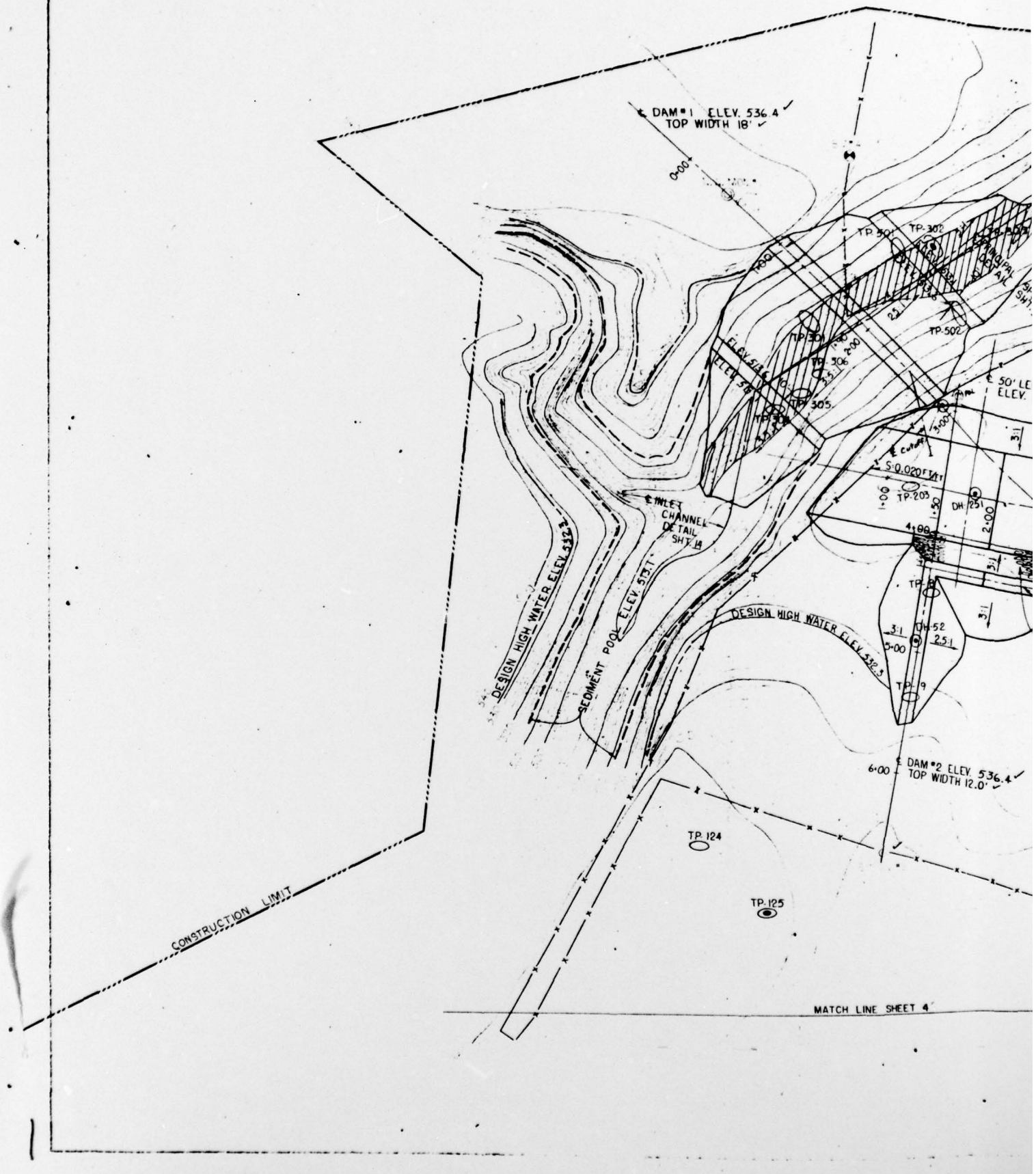
8/11/78

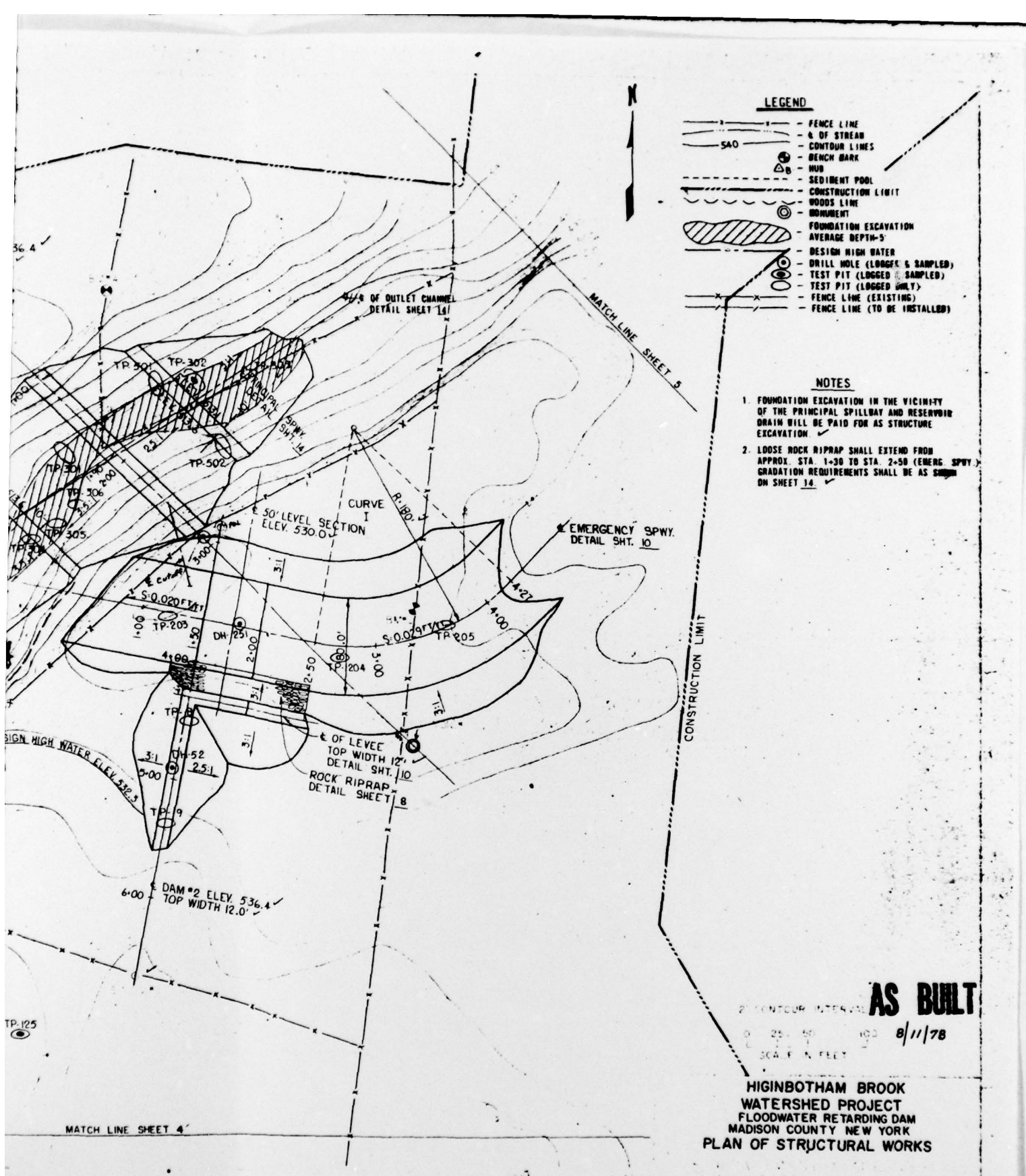
HIGINBOTHAM BROOK
WATERSHED PROJECT
FLOODWATER RETARDING DAM
MADISON COUNTY, NEW YORK
PLAN OF STORAGE AREA

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

W A RIEGEL	2-75	
Wm. Kenny	1-72	
D.E.W.	5-72	NY-2594-P

2


℄ DAM #1 ELEV. 536.4
TOP WIDTH 18'
0+00
TP 302
TP 301
TP 306
TP 305
TP 304
TP 303
TP 502
TP 501
℄ INLET CHANNEL DETAIL SHT 19
DESIGN HIGH WATER ELEV. 532.3
SEDIMENT POOL ELEV. 513.1
DESIGN HIGH WATER ELEV. 532.3
S=0.020 FT/FT
TP 203
DH 251
TP 18
DH 252
TP 19
6+00
℄ DAM #2 ELEV. 536.4
TOP WIDTH 12.0'
TP 124
TP 125
CONSTRUCTION LIMIT
MATCH LINE SHEET 4



AS BUILT

2' CONTOUR INTERVAL

0 25 50 100

SCALE IN FEET

8/11/78

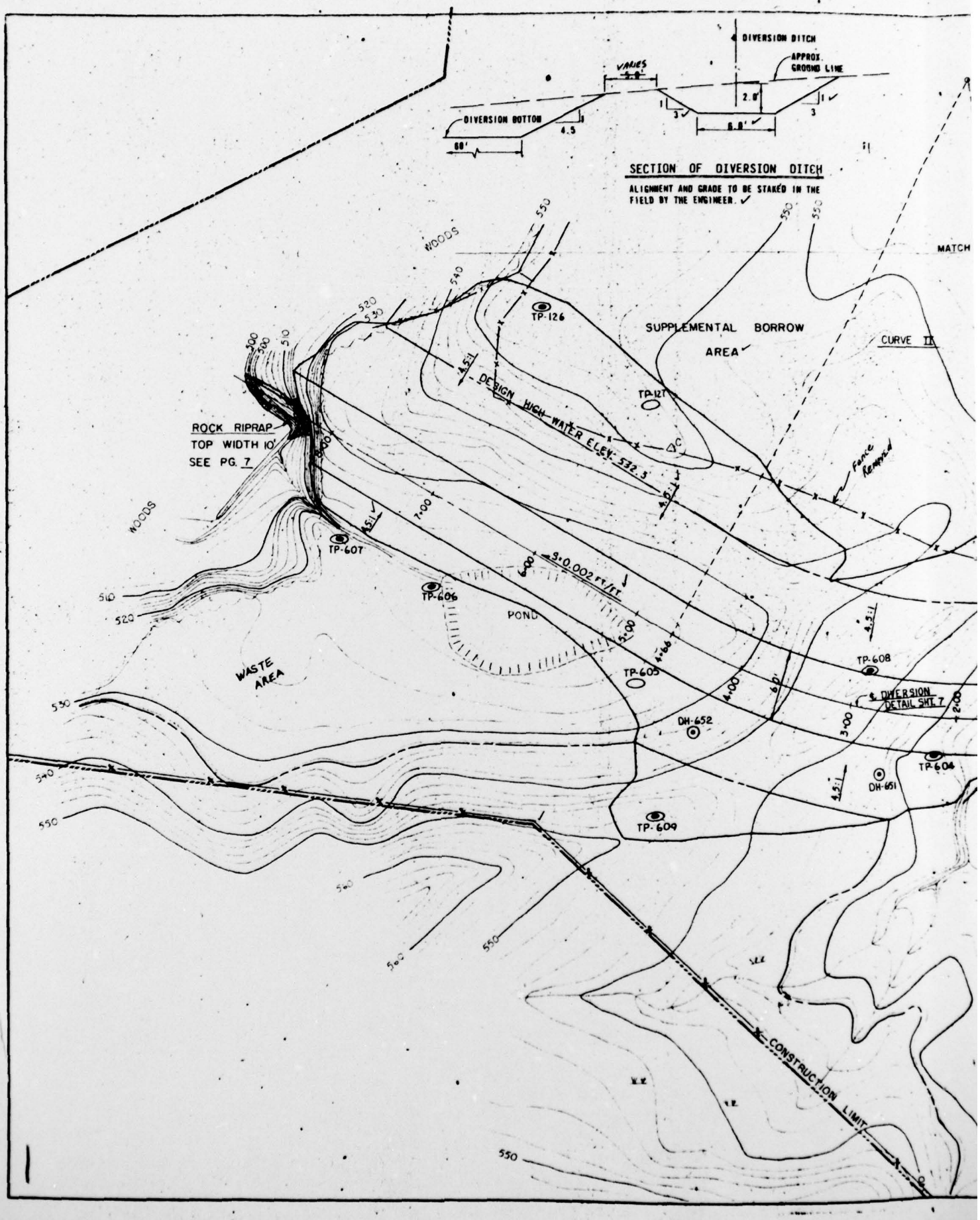
HIGINBOTHAM BROOK WATERSHED PROJECT

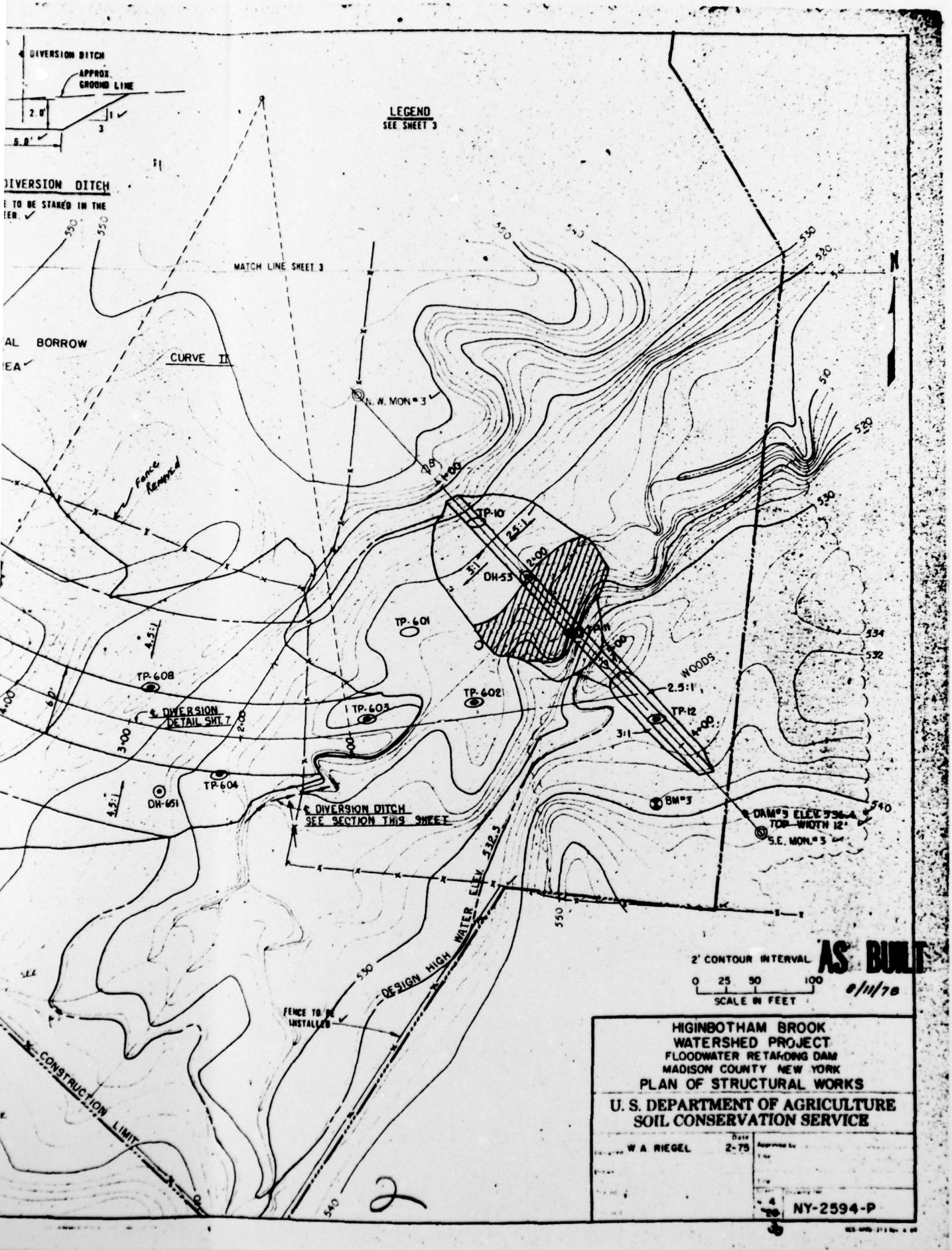
FLOODWATER RETARDING DAM
MADISON COUNTY NEW YORK

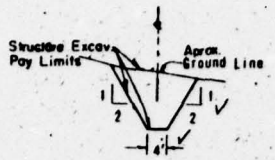
PLAN OF STRUCTURAL WORKS

W. A. RIEGEL	2-75	
D. ANGELO	2-75	
D.E.W.	5-75	3/23/30 NY-2594-P

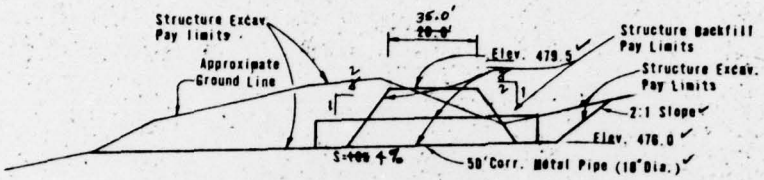
2


DIVERSION DITCH
APPROX. GROUND LINE
VARIES
DIVERSION BOTTOM
4.5
60'
2.8'
6.8'
SECTION OF DIVERSION DITCH
ALIGNMENT AND GRADE TO BE STAKED IN THE FIELD BY THE ENGINEER.
WOODS
MATCH
TP-126
SUPPLEMENTAL BORROW AREA
CURVE II
4.5:1
DESIGN HIGH WATER ELEV. 532.5
TP-127
ROCK RIPRAP
TOP WIDTH 10'
SEE PG. 7
Fence Removed
7.00
TP-607
TP-606
POND
3.0.002 ft/ft
5.00
4.66
4.00
6.0'
3.00
2.00
TP-608
TP-605
WASTE AREA
DIVERSION DETAIL SHT 7
DH-652
DH-651
TP-604
TP-609
CONSTRUCTION LIMIT

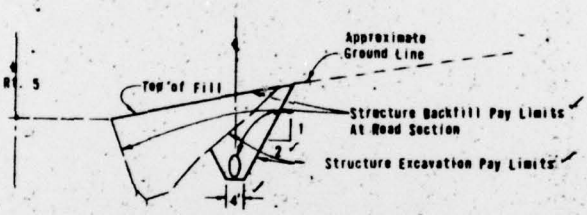

DIVERSION DITCH
APPROX. GROUND LINE
2.0'
1
3
6.0'
DIVERSION DITCH
E TO BE STAKED IN THE
EER.
LEGEND
SEE SHEET 3
MATCH LINE SHEET 3
AL BORROW
EA
CURVE II
N. W. MON.# 3
Fence Removed
TP-10
2.5:1
3:1
2.00
DH-53
TP-601
4.5:1
TP-608
TP-602
TP-603
TP-12
WOODS
2.5:1
4.00
3:1
TP-604
DH-651
4.5:1
℄ DIVERSION DETAIL SHT. 7
℄ DIVERSION DITCH SEE SECTION THIS SHEET
BM#3
DAM#3 ELEV. 536.4 TOP WIDTH 12'
S.E. MON.# 3
DESIGN HIGH WATER ELEV. 532.3
FENCE TO BE INSTALLED
CONSTRUCTION LIMIT
2' CONTOUR INTERVAL
0 25 50 100
SCALE IN FEET
AS BUILT
8/11/78
HIGINBOTHAM BROOK
WATERSHED PROJECT
FLOODWATER RETARDING DAM
MADISON COUNTY NEW YORK
PLAN OF STRUCTURAL WORKS
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
W A RIEGEL
2-75
NY-2594-P



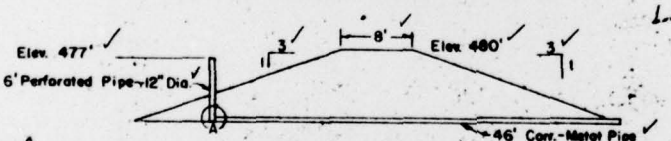
TYPICAL SECTION OF DITCH



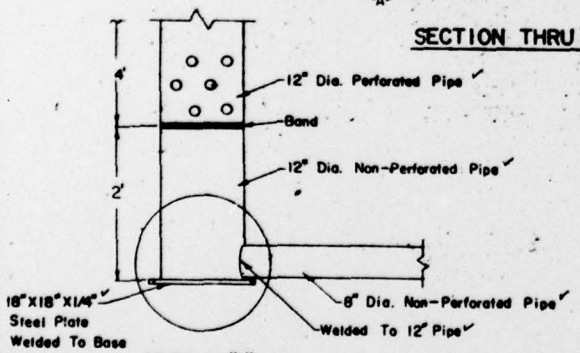
SECTION THROUGH ACCESS ROAD AT DITCH



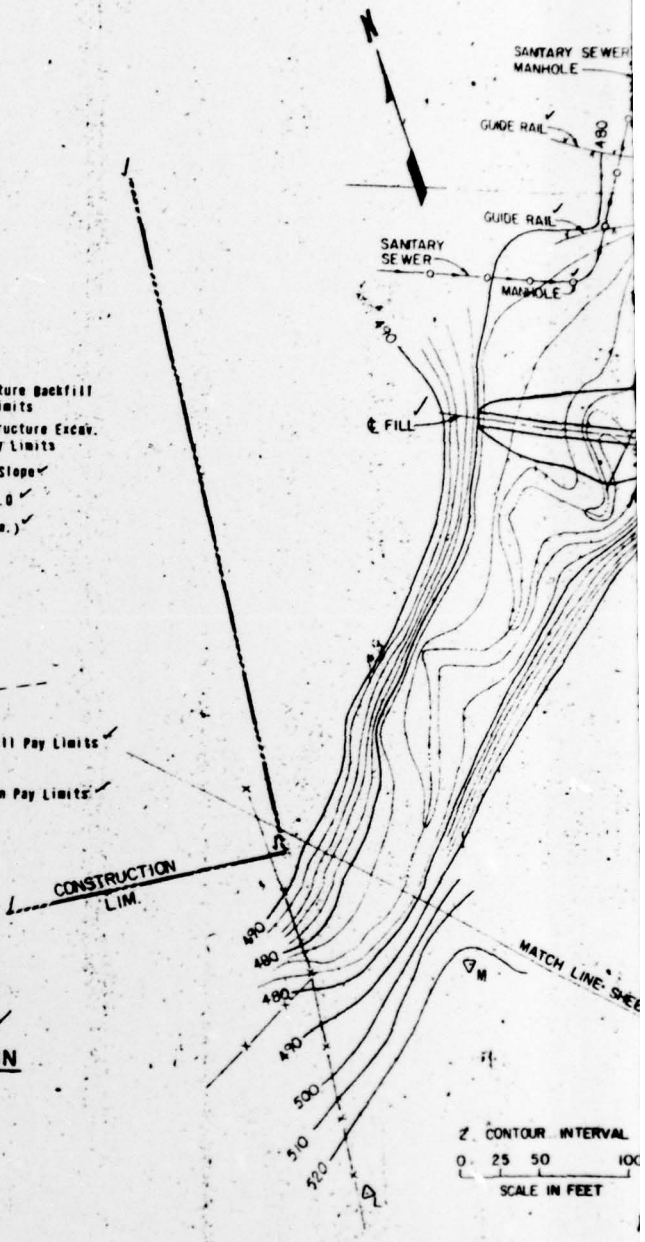
SECTION THROUGH PIPE

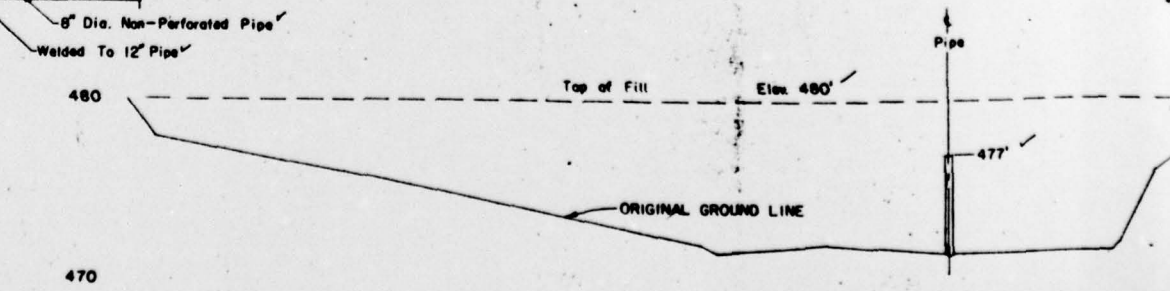


SECTION THRU ℄ OF SEDIMENT BASIN



DETAIL-"A"
(NOT TO SCALE)

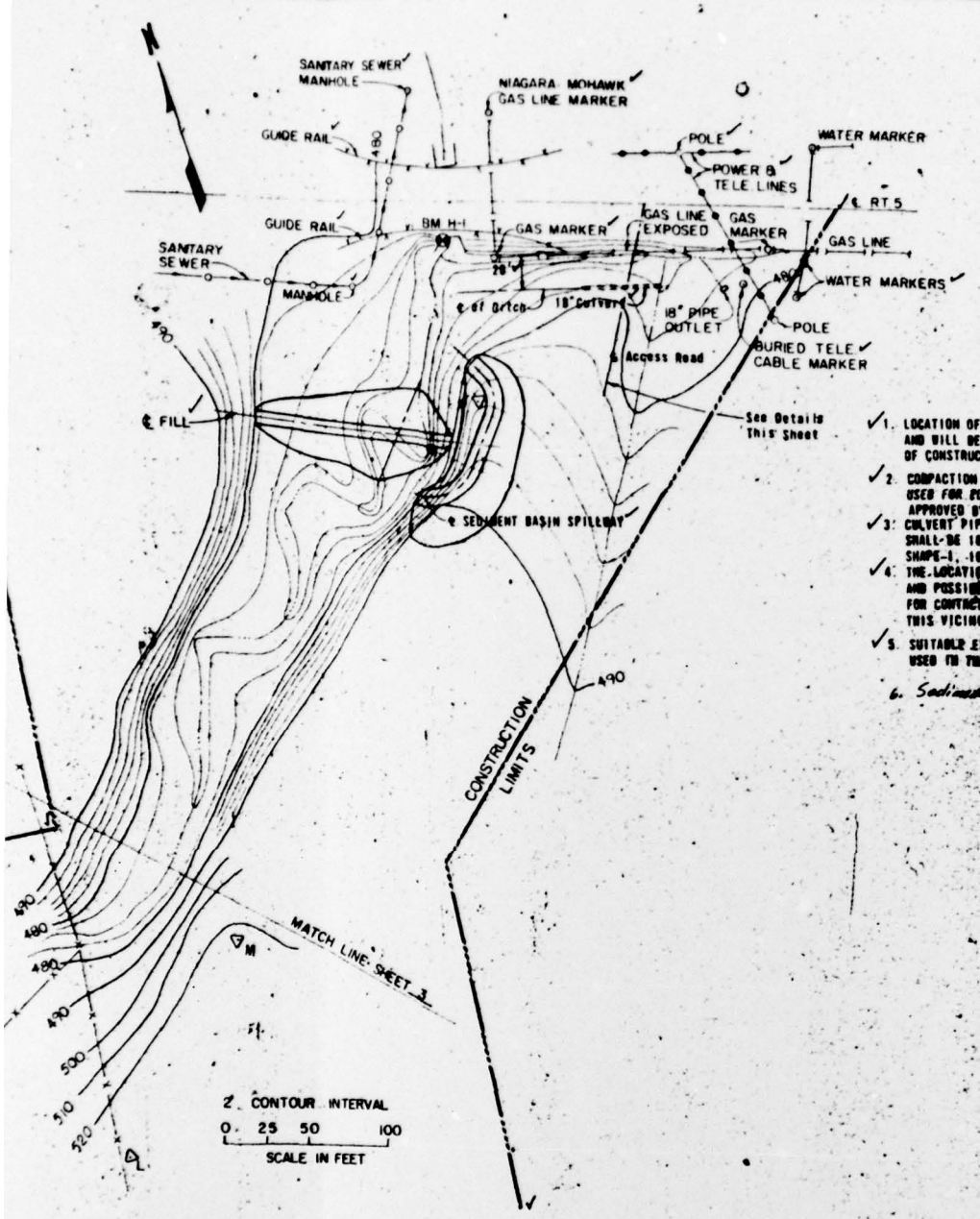




PROFILE ALONG ℄ OF SEDIMENT BASIN

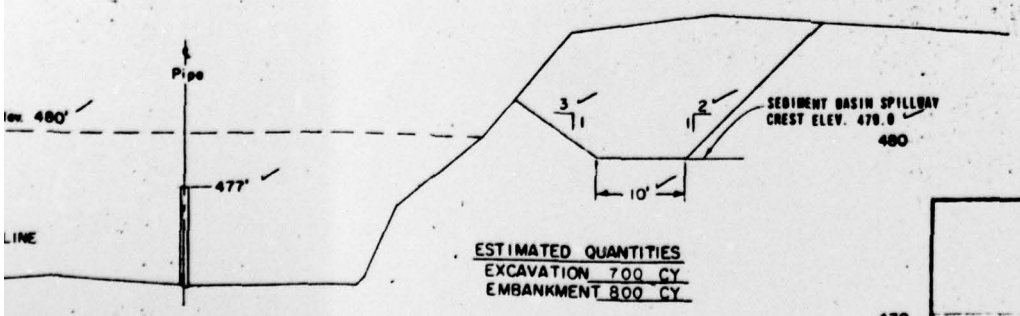
0 20 40 60 80 100
0 5 10 20
VERT SCALE IN FEET

0 10 20 40
HORIZ SCALE IN FEET



CONSTRUCTION DETAILS

1. LOCATION OF SEDIMENT BASIN AND ACCESS ROAD ARE APPROXIMATE AND WILL BE STAKED IN THE FIELD BY THE ENGINEER AT THE TIME OF CONSTRUCTION.
2. COMPACTION SHALL BE MADE BY A MIN. OF ONE PASS BY THE VEHICLE USED FOR PLACING THE MATERIAL, OR BY AN ALTERNATIVE METHOD APPROVED BY THE ENGINEER.
3. CULVERT PIPE USED BENEATH ACCESS ROAD FROM RT. 5 TO THE SITE SHALL BE 18 INCH DIA., ZINC COATED STEEL, CLASS I OR II, SERIES A SHAPE I, 16 GAUGE MINIMUM.
4. THE LOCATION OF UTILITIES SHOWN ON THE DRAWINGS IS APPROXIMATE AND POSSIBLY NOT COMPLETE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE APPROPRIATE UTILITIES PRIOR TO EXCAVATION IN THIS VICINITY.
5. SUITABLE EXCESS MATERIALS FROM THE SEDIMENT BASIN MAY BE USED IN THE DAM OR LEVEE.
6. Sediment Basin removed after use.



LE ALONG ℄ OF SEDIMENT BASIN

60 100 120 140 160
10 20 40
HORIZ SCALE IN FEET

ESTIMATED QUANTITIES
EXCAVATION 700 CY
EMBANKMENT 800 CY

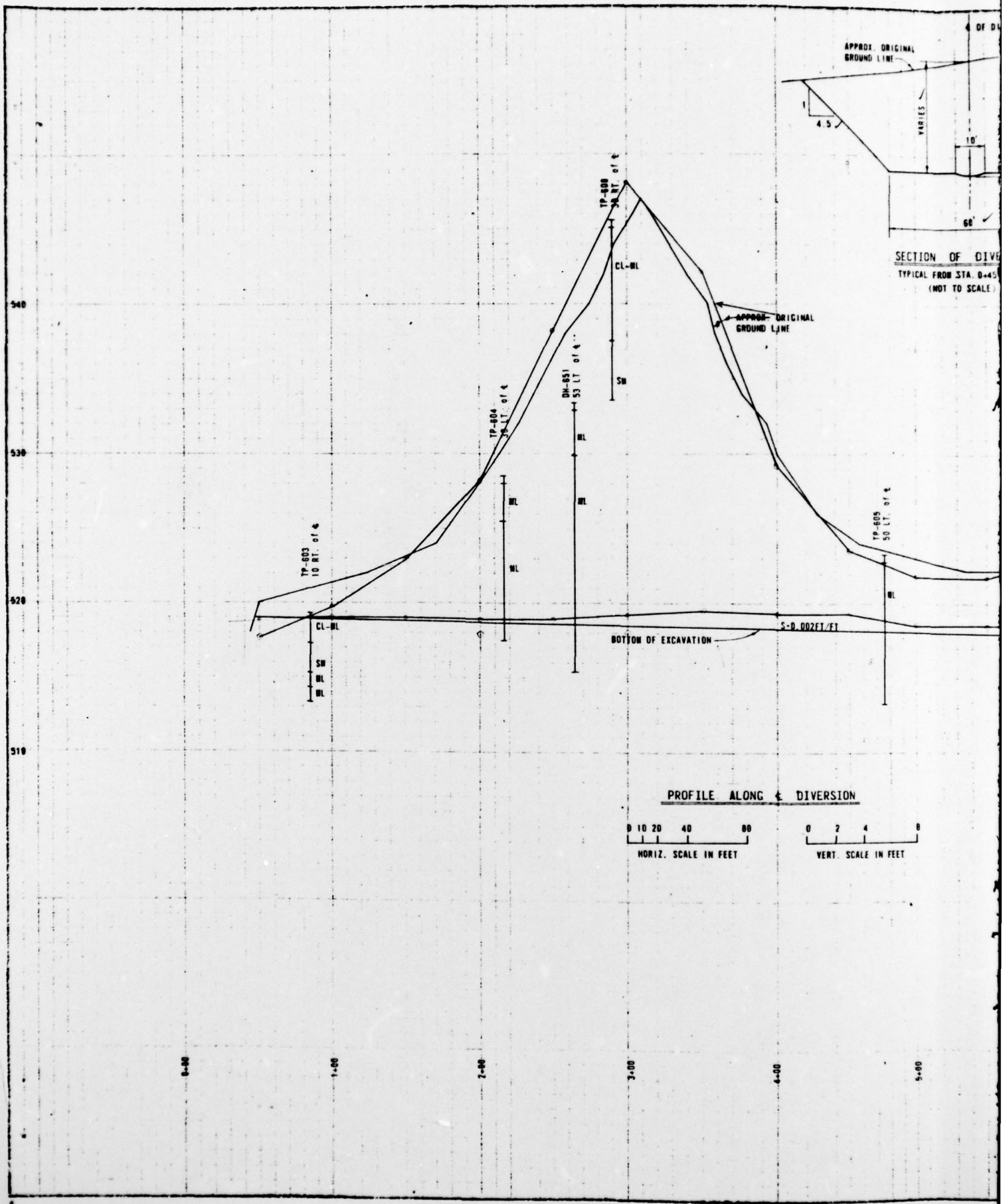
AS BUILT
8/11/78

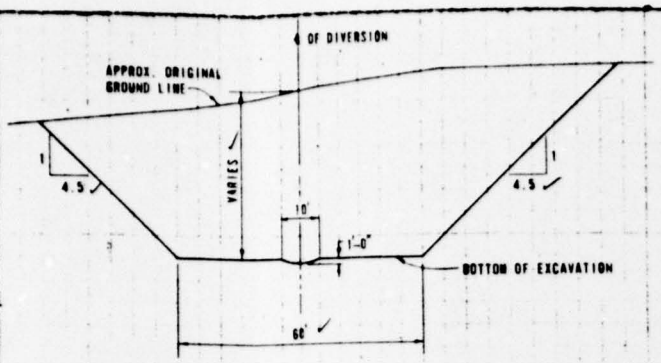
HIGINBOTHAM BROOK
WATERSHED PROJECT
FLOODWATER RETARDING DAM
MADISON COUNTY NEW YORK
SEDIMENT BASIN

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

W. A. RIEGEL	4-75	
O. E. W.	5-75	5 of 20 NY-2594-P

2


APPROX. ORIGINAL GROUND LINE
1
4.5
VARIES
10'
60'
SECTION OF DIVE
TYPICAL FROM STA. 0+45
(NOT TO SCALE)
TP-608 50 RT. of ℄
CL-BL
SW
APPROX ORIGINAL GROUND LINE
TP-604 50 LT. of ℄
DH-651 53 LT. of ℄
TP-603 10 RT. of ℄
TP-605 50 LT. of ℄
BL
CL-BL
SW
BL
BL
S-0.002FT/FT
BOTTOM OF EXCAVATION
540
530
520
510
0+00
1+00
2+00
3+00
4+00
5+00
PROFILE ALONG ℄ DIVERSION
0 10 20 40 80
HORIZ. SCALE IN FEET
0 2 4 8
VERT. SCALE IN FEET



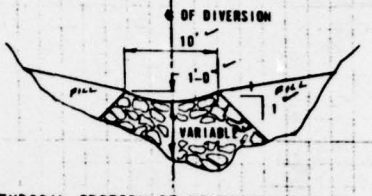
SECTION OF DIVERSION

TYPICAL FROM STA. 0+45 TO 8+20

(NOT TO SCALE)

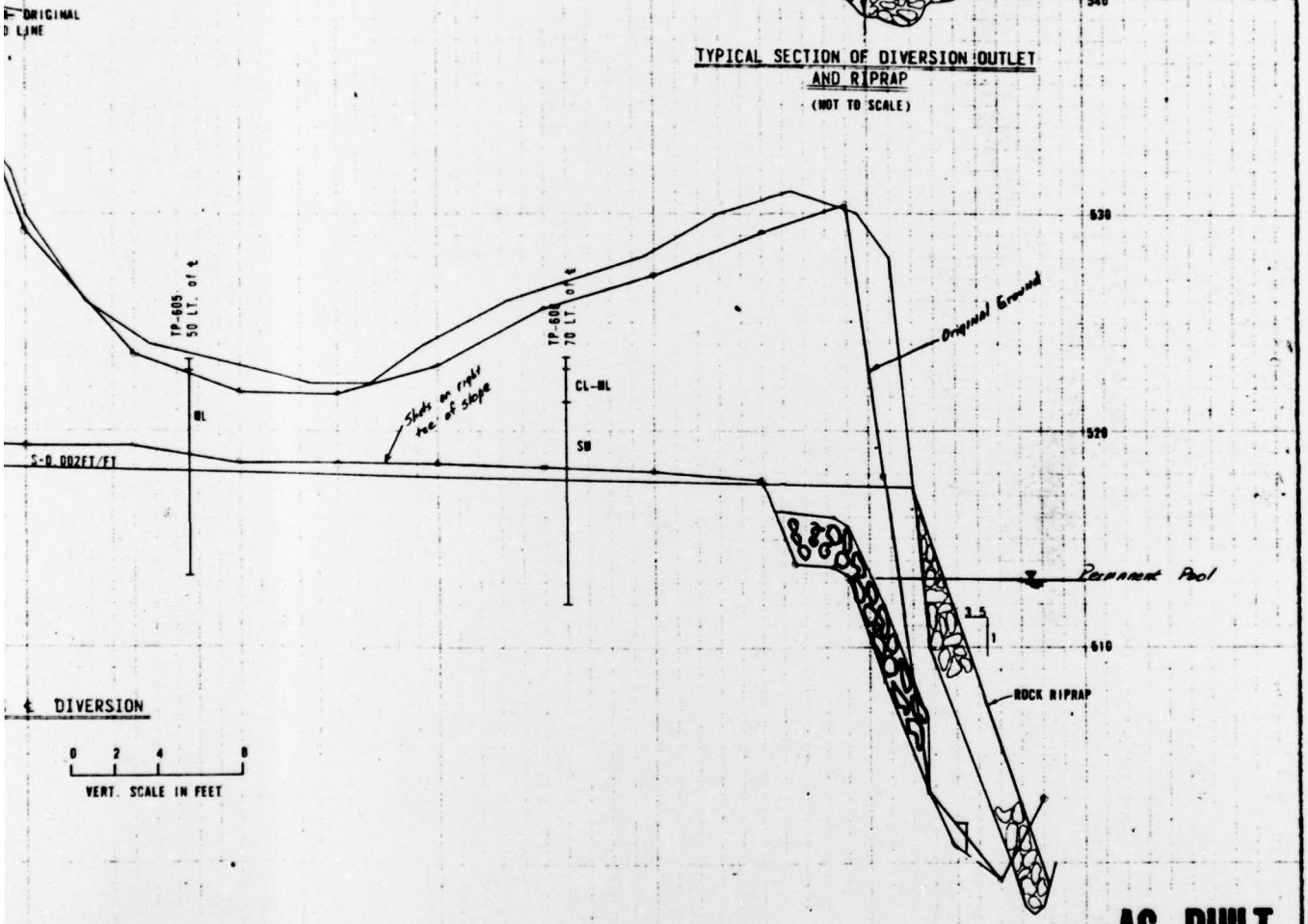
CONSTRUCTION DETAILS

ROCK RIPRAP SHALL BE EQUIPMENT PLACED AT OUTLET FOR DIVERSION at APPROX. STA. 8+20. ROCK PROTECTION SHALL BE APPROX. 10' WIDE. SLOPE SHALL BE APPROX. 3.5' HORIZ. TO 1.0' VERTICAL. NO BEDDING WILL BE REQUIRED. SEE SHEET 14 FOR GRADATION REQUIREMENTS.



TYPICAL SECTION OF DIVERSION OUTLET AND RIPRAP

(NOT TO SCALE)



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HIGINBOTHAM BROOK
WATERSHED PROJECT
FLOODWATER RETARDING DAM
MADISON COUNTY NEW YORK
DIVERSION

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed W. RIEGEL	Date 2-75	
Drawn D. ANGELO	3-75	
Traced		
Checked D.E.W.	5-75	Sheet No. 7 of 14 Sheets — NY-2594-P

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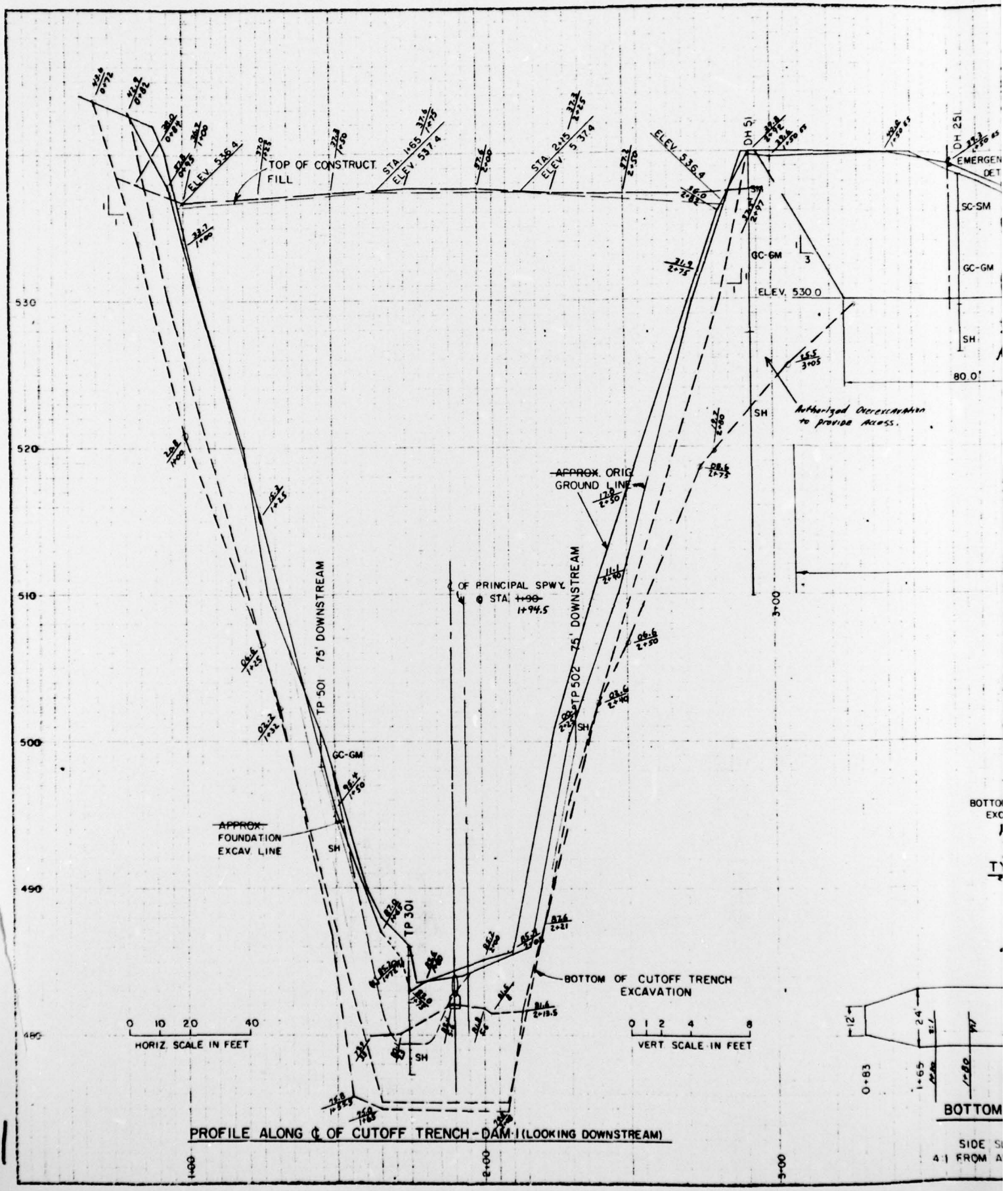
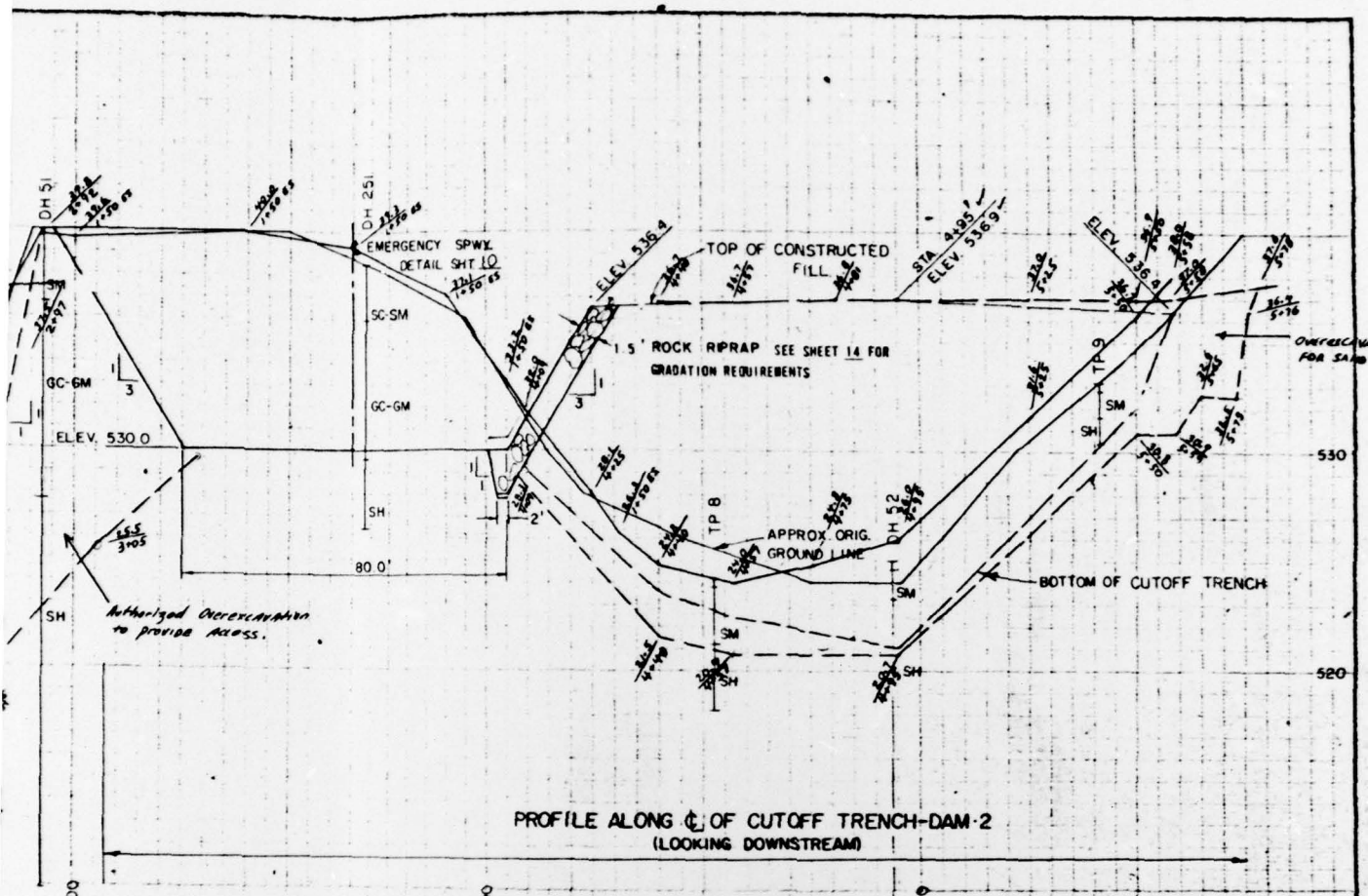
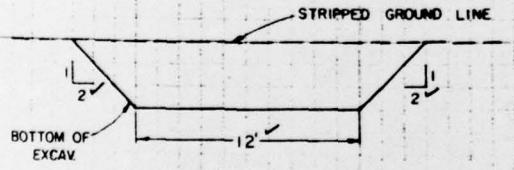


PROFILE ALONG ℄ OF CUTOFF TRENCH - DAM I (LOOKING DOWNSTREAM)



PROFILE ALONG ℄ OF CUTOFF TRENCH-DAM-2
(LOOKING DOWNSTREAM)



TYPICAL SECTION OF CUTOFF TRENCH-DAM-2

CUTOFF TRENCH DETAILS

1. THE BOTTOM OF CUTOFF TRENCH SHOWN IS APPROXIMATE. IT'S FINAL DEPTH WILL BE DETERMINED BY THE ENGINEER AT THE TIME OF CONSTRUCTION.
2. ALL ROCK SURFACES AT THE BOTTOM OF CUTOFF TRENCH SHALL BE FREE OF LOOSE MATERIAL AND CLEANED AS DESCRIBED IN THE SPECIFICATIONS PRIOR TO BACKFILLING. JOINTS OR CRACKS ENCOUNTERED IN THE BOTTOM OR SIDES OF THE CUTOFF TRENCH WILL BE EXAMINED BY THE ENGINEER TO DETERMINE THE NEED FOR ROCK TREATMENT PRIOR TO BACKFILLING.

AS BUILT
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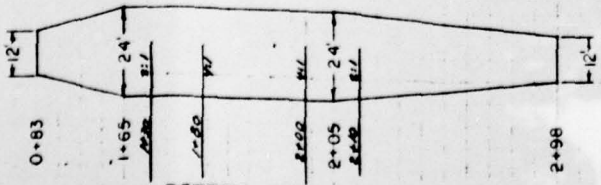

BOTTOM WIDTH OF CUTOFF-DAM-1
(NOT TO SCALE)
SIDE SLOPES SHALL BE 4:1 FROM APPROX STA 1+80-2+00

HIGINBOTHAM BROOK WATERSHED PROJECT
FLOODWATER RETARDING DAM
MADISON COUNTY, NEW YORK
CUTOFF TRENCH EXCAVATION-DAM 1&2

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

W.A. RIEGEL	2-75	
D. ANGELO	2-75	
R. J. KELLEY		
D.E.W.	5-75	NY-2594-P

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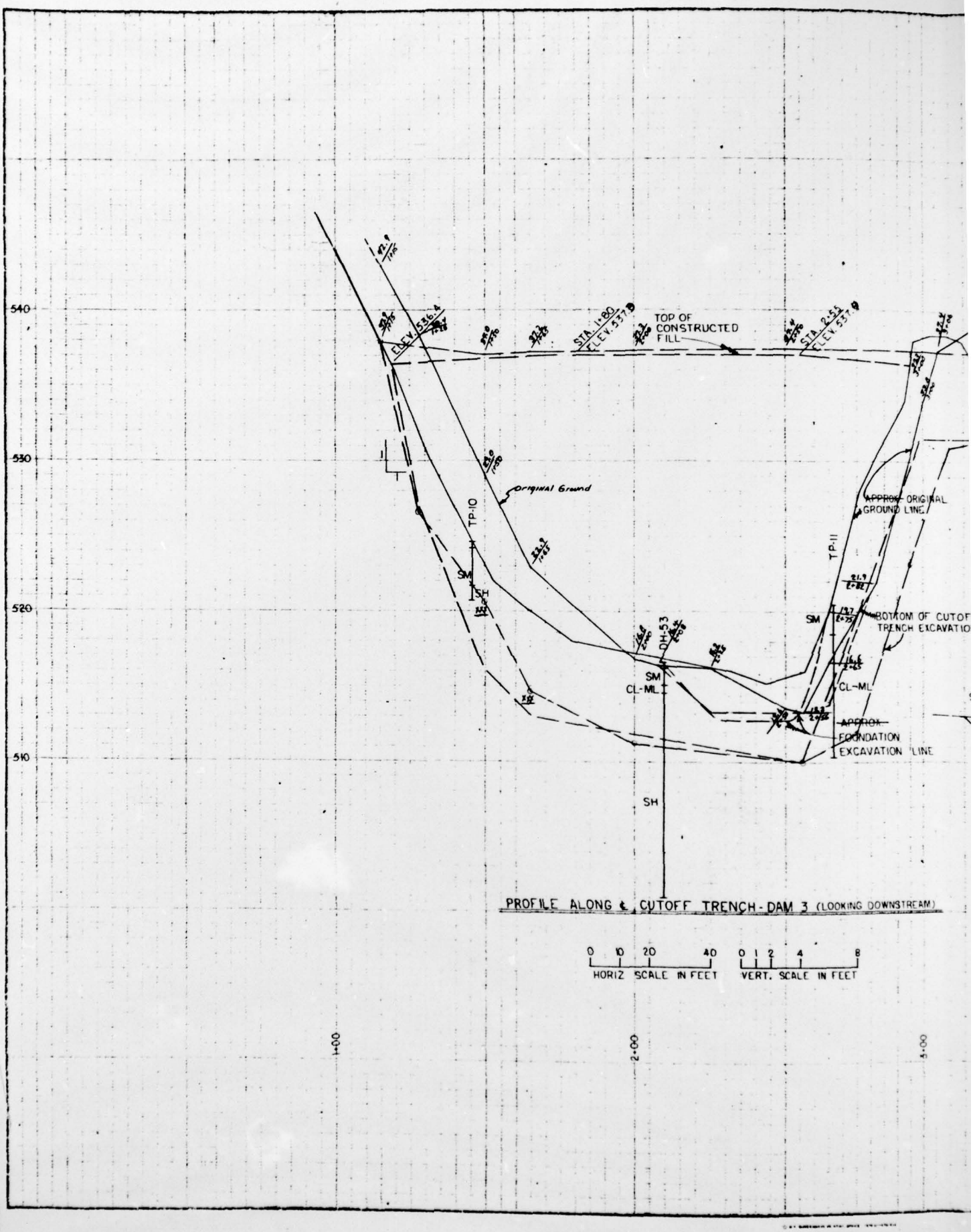
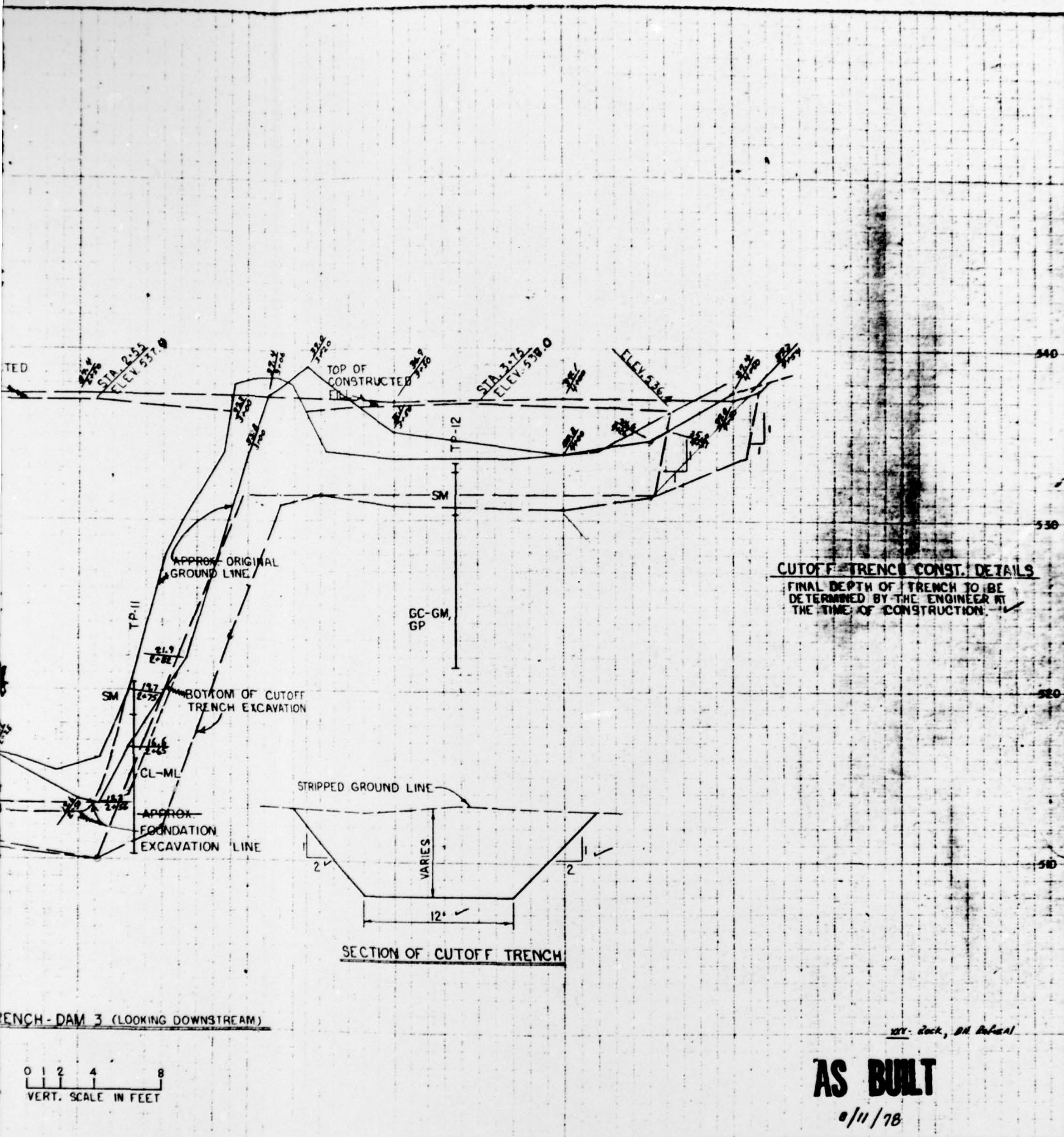


PROFILE ALONG ℄ CUTOFF TRENCH - DAM 3 (LOOKING DOWNSTREAM)

0 10 20 40 HORIZ SCALE IN FEET

0 1 2 4 8 VERT. SCALE IN FEET



AS BUILT

8/11/78

HIGINBOTHAM BROOK
WATERSHED PROJECT
FLOODWATER RETARDING DAM
MADISON COUNTY NEW YORK
CUTOFF TRENCH EXCAVATION - DAM 3

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed W. A. RIEGEL	2-75	Approved by
Drawn D. ANGELO	2-75	Title
Traced		Sheet No. 9 of 35
Checked D.E.W.	5-75	Drawing No. NY-2594-P

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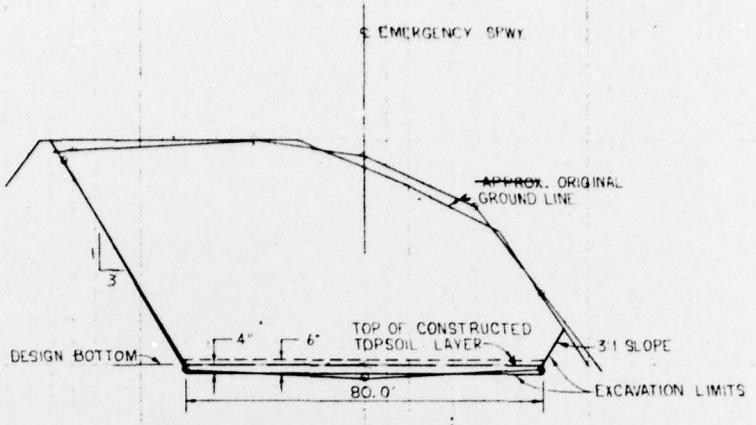
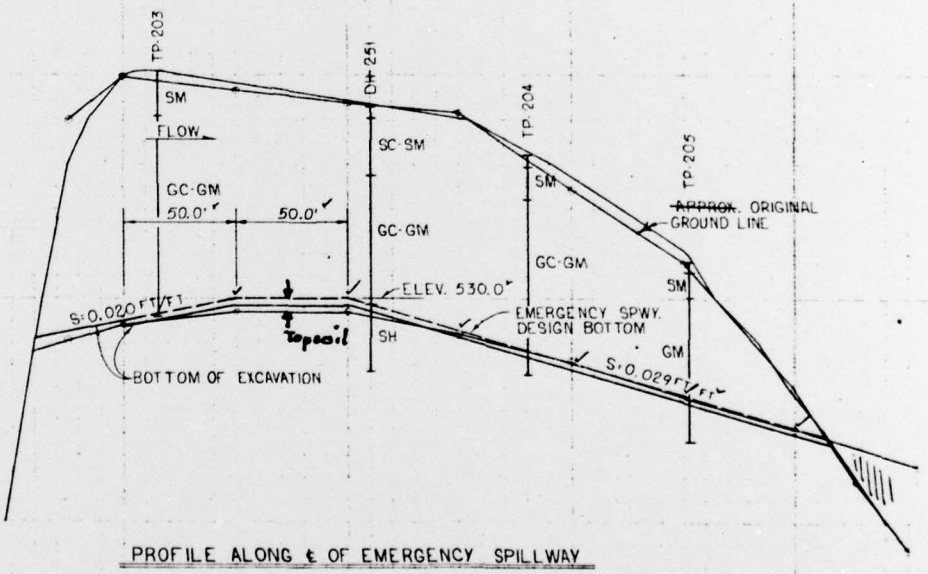


SECTION OF EMERGENCY SPILLWAY AT STA. 1+50

TYPICAL FROM STA. 1+00 TO APPROX. STA. 4+15. EXCAVATION LIMITS TO DESIGN BOTTOM FROM APPROX. STA. 0+40 TO STA. 1+00

0 10 20 40 HORIZ SCALE IN FEET

0 1 2 4 8 VERT. SCALE IN FEET

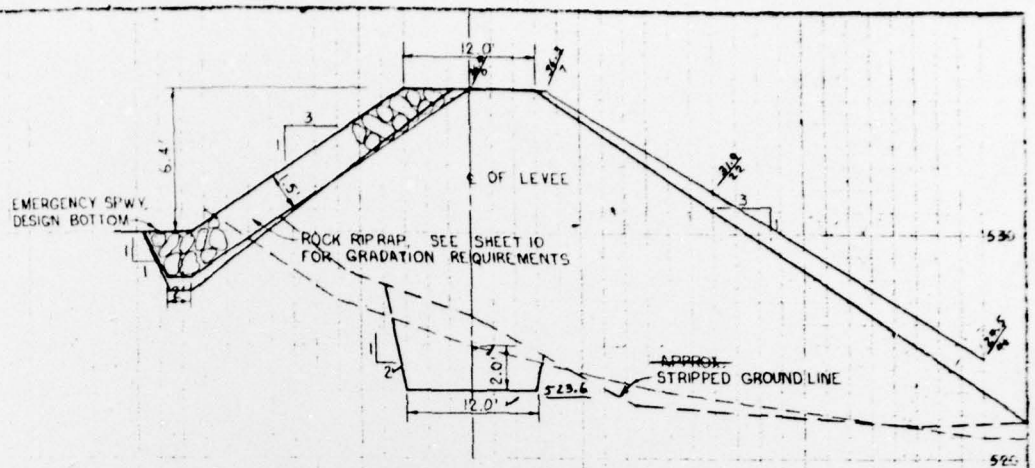


PROFILE ALONG ℄ OF EMERGENCY SPILLWAY

0 10 20 40 80 HORIZ. SCALE IN FEET

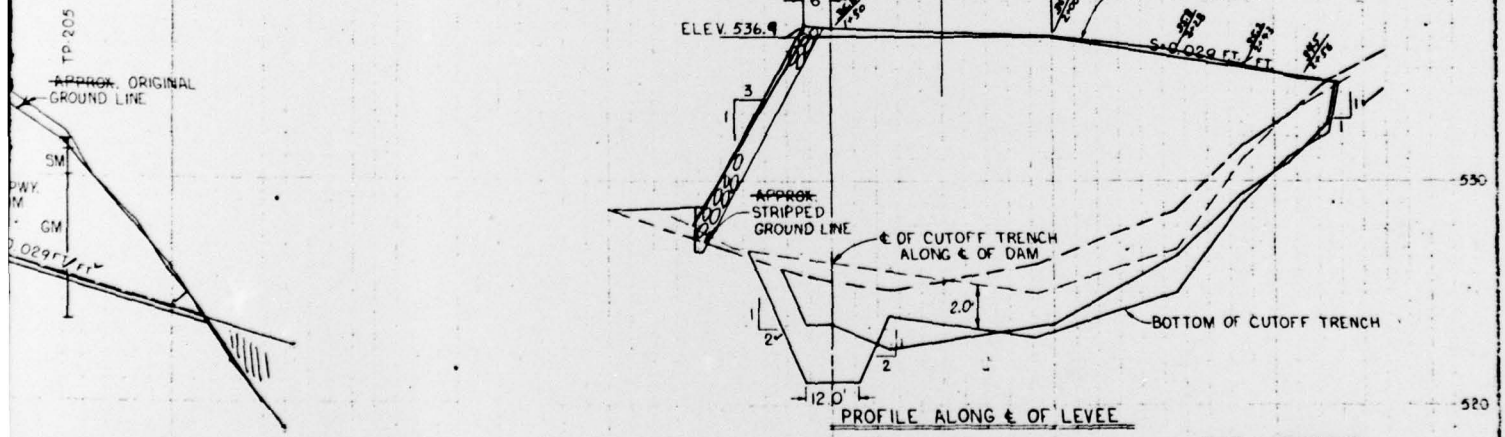
0 1 2 4 8 VERT. SCALE IN FEET

0+00 1+00 2+00 3+00 4+00 5+00



SECTION OF LEVEE AT STA. 2+00
TYPICAL FROM EMERGENCY SPILLWAY

HORIZ SCALE IN FEET 0 2 4 8 16 — VERT SCALE IN FEET 0 1 2 4 8



PROFILE ALONG ℄ OF LEVEE

HORIZ SCALE IN FEET 0 10 20 40 — VERT. SCALE IN FEET 0 1 2 4 8

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HIGINBOTHAM BROOK
WATERSHED PROJECT
FLOODWATER RETARDING DAM
MADISON COUNTY NEW YORK
EMERGENCY SPILLWAY

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

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D ANGELO	2-75	
D E W	5-75	NY-2594-P

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